



Sound Card Packet



Information on this site is also available in PDF file. See [bottom of page for details](#).



[Traduit en Français](#) par Thierry, F6BXM



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[Most recent AGWPE version](#) is 2002.10
(Feb. 13, 2002)

by [Ralph Milnes, KC2RLM](#) - last updated: **03/05/2002**

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Overview

Here's a way to send and receive packet using the **sound card** on your PC -- no TNC required!

The key is running a **free** utility called **AGWPE**, which was written by George Rossopoulos, SV2AGW. AGWPE (which stands for "**AGW** Packet **E**ngine") was designed to act as a "switchboard" between packet programs and your TNCs. AGWPE has many super [features of interest to packet users](#), but this web site deals only with its ability to encode and decode packet tones using your **computer sound card**. AGWPE is the only program that I know of that can do this, other than [Flexnet](#) and [MixW32](#). AGWPE is different from those two in that it acts as a server (or host) program for client applications which don't have sound card modem capabilities of their own.

Note that most packet programs will **not** work with AGWPE. Only [compatible programs](#) that have been specifically written to take advantage of AGWPE's host services will work... but there are a number of good ones.

The sound card features of AGWPE should work with any 16 or 32-bit Sound Blaster compatible sound card running under Windows versions 95, 98, ME, XP and 2000. (I have not heard of anyone being able to get AGWPE's sound card features to work on NT 4.0.) It will **not** work with plain old DOS or Windows 3.1.

There's no specific minimum for a processor (CPU), although a Pentium 166 is typically considered to be approaching the lower end. See the [More About AGWPE](#) for more information about processor requirements. You should also have up-to-date drivers for your sound card.

You will probably find that the AGWPE soundcard modem is far better than any other hardware TNC. The 300 baud HF modem is so sensitive that it demodulates packets that you cannot hear! The 1200 baud modem can decode packets even with S3 or less signal strength. And the 9600 baud modem is better than the original G3RUH.

Recent significant improvements to AGWPE allow you to:



Use the stereo (2 channel) features of your sound card to [connect to two radios](#) on different frequencies at the same time using just one sound card.



[Install a second sound card](#) that can be used exclusively for sound card packet. Your first sound card can then be used by Windows for other sound-producing programs and devices, such as your CD player.



Use "on air" baud rates of 300 (HF), 2400, and 9600, in addition to 1200. (See the [More About AGWPE](#) page for additional info about 300 baud SSB operations and 9600 FSK operations.)



Use a [Sound Card Tuning Aid](#) feature for accurately tuning signals, particularly on HF, and for setting the correct RX (receive) audio volume.

Getting AGWPE to work correctly can be tricky, since you'll need to construct a radio-to-computer interface with 3 cables *and* configure three different programs correctly. Hence, this web site. (Please note that the AGWPE [Help](#) file included with the program is becoming out of date; in some cases it is wrong. We keep George so busy programming, it's hard for him to find time to fix the Help file!)

There are 5 basic steps in getting AGWPE and your sound card to handle packet. These steps are discussed in 5 different sections on this site.

1. Install and configure the AGWPE program.
2. Build a radio-to-computer interface -- one cable each for RX, TX, and PTT.
3. Configure Windows
4. Setup your application
5. Troubleshoot problems - but hopefully you won't need it.

If you get hung up, you can [e-mail me](#). I'll try to answer your questions, but I won't pretend to be the complete AGWPE sound card expert. In fact, if you find any errors or omissions on these pages, please [let me know](#). For the best troubleshooting help, I suggest you [subscribe to a special AGWPE email reflector/list server](#) to ask for help from other AGWPE users and even the author, George, SV2AGW.

The information on this web site is derived from my experience and those of several participants in the APRS Special Interest Group (SIG) reflector, in particular Bill Kearns, WB6JAR and Stephen Smith, WA8LMF.

Get this Sound Card Packet site in a PDF file

You can get all the pages of this Sound Card Packet web site in an Adobe Acrobat PDF file, but the .zip file is large (approx. 900 KB). The zip file expands to a PDF file that is 1.4 MB (!) and over 130 pages (I'm working on a better way to do this).

The primary advantage of a PDF file is that it should print better than printing directly from your browser. It is also in slightly larger print for easier paper viewing. But you may want to be selective in what you print. For example, you may not need to print out the setup pages for all the applications listed. And if you don't need the larger image files for each of the thumbnail images, then don't print the graphic pages at the end of the document.

The last PDF update was: **Feb 18, 2002**

[Get Sound Card Packet PDF zip file](#)

[Alternate download site](#)

The file will come as a self-extracting zip file. Run the soundcardpdf.exe file to automatically expand it to a PDF file.

If you need to download a PDF file reader, [go to the Adobe Acrobat Reader Site](#).



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Interesting fact: The maximum potential packet baud rate for a sound card is half the sound card sampling rate. Most sound cards use as sampling rate of 44100. So the maximum using most sound cards would be 22050, which is closest to the 19200 baud standard.

Some Compatible Programs

Programs that will work with AGWPE include:



[WinAPRS](#)

[APRSplus](#)

[UI-View \(both 16 and 32 bit versions\)](#)

[WinPack](#)

[the suite of programs written by SV2AGW](#)

including AGWTerm, AGWMonitor, and AGWCluster

Clicking on any of the links above will take you to a page on this web site with specific information about the program and how to configure it for AGWPE.

Listed below are some other programs which will work with AGWPE. There are no pages on this site about the program, but the hyperlinks will take you a site with more information about the program.

[Pedro, LU7DID](#), has written several complimentary programs, including:



[Digiplex](#) (provides digipeating/routing)

[XGlue](#) (an interface to PC/Flexnet32 and thus to programs that work with Flexnet)



[TelMgr](#) (allows access to AGWPE via a Telnet connection).

[UISS](#), written by Guy, ON1DHT, is a program designed for packet communication with the ISS (International Space Station) or 'compatible' satellites. One special feature that **it can send unconnected packets** a la APRS (WinPack and AGWTerm can't do this.)

[APRSPoint](#), written by Michael Cai, is an APRS program that works with Microsoft's MapPoint program.

[RXClus](#), written by Robert, HB9BZA, monitors DX Cluster frequencies.

[AGW Packet Engine Telnet Interface](#), written by Manto, IZ4AFW, is a utility that lets you interface with [Logger](#) .

In addition, the [AGWPE site](#) has information about a few other programs that will work with AGWPE.








HF Packet Operation (300 baud)

Setting up AGWPE for 300 baud HF packet isn't much different than for 1200 or 9600. On the AGWPE [Properties for Port 1](#) window, push the [Options](#) button to call up a [Sound Card Modem/TNC Setup](#) window with baud choices for the left channel (port 1/radio1) and right channel (port 2/radio 2). Just select 300 baud for the left channel (see also the [AGWPE setup page](#)).

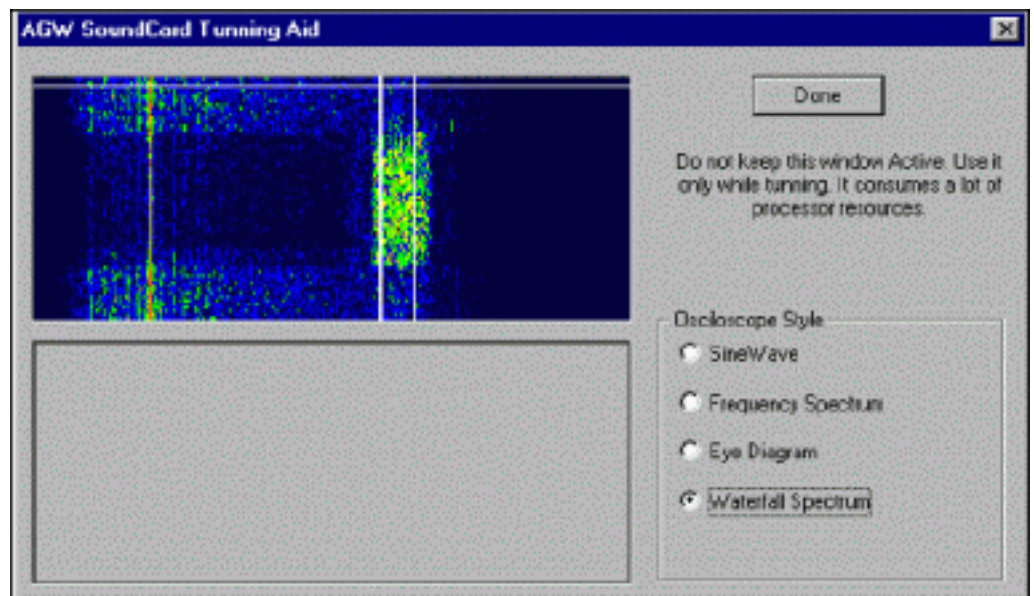
Processor Tip: George SV2AGW suggests that to save some processor resources, it's best to operate 300 baud in [Single Port](#) mode (see the [AGWPE setup page](#).)

For example, if you selected dual port, the Sound Card Tuning Aid window (see below) will show 2 active tuning windows and the program may run slow. To close/grey out the lower window, change the AGWPE port properties to [Single Port](#). (Note: If you've messed around a lot with the AGWPE port configuration, it is a good idea to delete AGPWE.INI and all PORTx.INI files from the AGWPE directory and and start again.)

HF packet operations, however, are quite different from VHF/UHF operations as you probably already know:

-  operations more easily affected by interference and propagation conditions
-  operations adversely affected by low signal-to-noise ratios and spurious noise
-  the maximum data rate is less -- 300 baud compared to 1200 baud or more on UHF/VHF
-  the tone shift is 200 Hz rather than the 1000 Hz used on UHF/VHF
-  frequency shift keying (FSK) on SSB is used instead of audio frequency shift keying (AFSK) on FM (UHF/VHF)
-  digipeating not generally used (3rd party traffic concerns)
-  tuning is more difficult

To aid tuning, AGWPE includes a [Sound Card Tuning Aid](#). You can find it on the AGWPE pop-up window accessible by clicking on the AGWPE tower icon in the System Tray. It's probably best to select the [Waterfall Spectrum](#) style. Signals are represented by blues, greens, yellows, and reds (weaker to stronger) on a black background (no signal). Tune your transceiver so that the colorful portion of the screen scrolls down between the two vertical lines. To get good copy, the tone must be precisely centered between the two lines.



The sound volume (colors) in the [Waterfall Spectrum](#) can be adjusted by the TX audio volume. But it's better to use the [SineWave](#) style to see the volume of the incoming signals. The wave heights should only be 1/4 to 1/3 the screen. If necessary, adjust the [Line In](#) slider in the [Recording window of the Volume Control program](#).

Note: AGWPE emulates a PK-232 HF modem and uses tones of 2110Hz

and 2310Hz for a center frequency of 2210 Hz and the standard HF packet tone shift of 200 Hz. If you are accustomed to KAM tones of 1600Hz and 1800Hz, you'll need to adjust your radio tuning by 510 Hz (+510 Hz for Lower Side Band and -510 Hz for Upper Side Band).

PTT: You should be able to use your VOX key up on an HF rig and that can negate the need for a separate PTT cable. If you use VOX, set the AGWPE port to some unused port so you don't conflict or tie up a real port. Also remember that VOX is subject to other noises that it hears, such as [Windows sounds](#), program sounds, etc. It is probably best to turn those off if you run with VOX. Also, depending on your microphone setup, watch out for room noise, talking, etc.

For an overview of HF packet operations see [Tuning HF Digital Signals de Gloria, KA5ZTX](#). For that matter, [Gloria's site](#) is a great packet tutorial.

HF Packet - LSB	
Band	Suggested Frequencies* (channel centers = RF between the 2 tones)
80	3580-3635, priority at 3620-3635
40	7035-7050, priority at 7040-7050 and 7100-7120 with Americas
30	10.130-10.150, priority at 10.140-10.150
20	14.070-14.112, except 14.100 (beacons); priority at 14.095-14.0995
17	18.100-18.110, priority 18.104-18.110
15	21.070-21.125, priority 21.090-21.125
12	24.920-24.930, priority 24.925-24.930
10	28.070-28.189, priority 28.120-28.189
* AGWPE tones have a center frequency of 2210 Hz, so for LSB you would set your radio dial + 2210 Hz higher than the frequencies listed above. (For LSB, remember that the higher the frequency shift, the lower the resulting LSB frequency.)	



20 Meters is the most active HF packet band.



Look for APRS beacons at 10.151.5 MHz LSB (North America) or 14.105.5 MHz LSB (Regions 1 & 2). These are the suppressed-carrier (radio dial) frequencies only for AGWPE (and PK-232 TNCs) with a +2210 Hz center frequency. Other users may refer to these APRS dial frequencies as 10.151 MHz and 14.105 MHz respectively, however, those dial frequencies are only only correct for KAM TNC's with a center freq of 1700 Hz or 510 Hz less than AGWPE's tones.

9600 Baud Operations

Because 9600 baud packet is FSK (frequency shift keyed) and not AFSK (audio frequency shift keyed), and because of the very quick TX-to-RX switching times required, most radios will not handle 9600 baud packet correctly. Among the newer plug-and-play 9600 baud transceivers, only the Kenwood TM-V7 and D700 and the Yaesu FT817 operate properly at 9600 baud. All others cannot, including the YAESU 8100. The only exceptions are multimode transceivers, such as the ICOM 275.

Most older transceivers need modifications to work properly at 9600 baud. You cannot feed 9600 AGWPE tones through the microphone input (TX) on most radios; likewise you can't use the speaker output (RX). You must connect the TX modulation direct to the VCO and the RX demodulator direct to the discriminator output. (Visit the TAPR site for advice on radio modifications: <ftp://ftp.tapr.org/general/9600baud/>)

Note that 9600 packet may require a full-scale S-meter reading for reliable communications. Poor signal strength may result in frequent communication errors.

For more on 9600 baud operations, see the [9600 Baud Packet Handbook by Mike Curtis, WD6WHR](#).

AGWPE Processor Requirements

It's impossible to give a definite minimum requirement for the processor needed to run AGWPE. There are many variables that have an effect on operations including RAM, video card, sound card, sound card drivers, etc.

George SV2AGW, the program author, wrote once: It depends on what you are using, but generally the minimum requirements are Pentium 100MHZ and 64MB RAM and Win98SE.

(Versions up to 2002.10 will run on Win 95. Nevertheless, Win95 has been a problem for George, and even Microsoft has now stopped supporting it. So, if you haven't upgraded, you might want to consider it. Future versions of AGWPE may not be compatible.)

Here's a posting from one user running AGWPE on a 486 66 MHz computer with 28 MB of RAM:

"For 1200baud AFSK digital signal processing (DSP) algorithms you do **not** need a lot of CPU power. If you're into real time video processing, yes, but in general a 486/66 is plenty for the DSP algorithms used in packet radio. Thomas Sailer who developed the algorithms considers a 486/66 as a minimum.

Also, keep in mind that even at a 44KHz sampling rate and at 16 bit resolution, you only need 88Kb to store 1 second of audio. The applications that we are talking about do not store huge amount of data, so a lot of RAM is not necessary for these applications. The only reason you might want to consider more RAM (32MB+) is to keep Windows running at a reasonable speed and leave more processing resources for user space algorithms and to prevent your packet applications from being swapped out.







The real problem is how Windows handles resources, and how the drivers are being accessed by the applications. George mentions this on his web site. At this time I have version 2000.15 running on a small 486/66/28Mb/Win95 with no problem. I can surf the net and start other applications with no problem. WinAPRS and AGWPE keep humming."

Another user wrote: "I've had barely tolerable results using Win 3.1 / 486-100 / 8 MB. I have to religiously stay AWAY from highly detailed APRS maps. Though poor for mapping, it's actually a perfectly good messaging platform."

And paraphrasing Stephen: "I run AGW very nicely on a mere classic Pentium MMX 166. A non-MMX P200 (in the same machine) won't run these apps reliably. Ham sound card programs are one of the few real-world applications where MMX actually does make a difference. In nearly every case, the presence or absence of MMX is the critical processor "horsepower" threshold that determines whether a sound card app will run or not. By the way, all Pentiums after the original Pentium with MMX (i.e. all P-II, P-III, P4) incorporate the MMX instruction set as a matter of course."

Other AGWPE Features

The instructions on this web site cover just the sound card features of AGWPE. To learn more about AGWPE's capabilities, I suggest you read the info pages at the [AGWPE web site](#) and the program's integrated [Help](#) files ([Help](#) is on the AGWPE popup menu). Then explore the program's various menu options. For example, you'll discover that AGWPE:

-  will work with multiple TNCs and multiple packet programs
-  can automatically launch your packet programs right after it loads
-  can direct specific packets to specific programs. For example BBS packets can be directed to your packet terminal program, while DX cluster packets heard on the same frequency can be directed to a DX cluster program (The secret? Signing in to the BBS and Cluster with different SSIDs, e.g. KC2RLM-2 for BBS and KC2RLM-3 for DX Clusters.)
-  will automatically adjust TNC timing parameters as it senses packet traffic on the frequency.
-  will let you use the internet to tie into the feed from a remote TNC running under AGWPE.
-  with a special "TCP/IP Over Radio" driver, you could use packet radio to connect your station (having no internet access) to another station (with internet access) and create a TCP/IP network. You could then use the internet gateway station to send and receive email, surf the web, etc.

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Download and Install AGWPE

1. Download the AGWPE Program



The AGWPE web site is at

<http://www.raag.org/sv2agw/index.html>

There's a mirror site at <http://www.elcom.gr/sv2agw/>



You can download the AGWPE program at either:

<http://www.raag.org/sv2agw/agwpe.zip>

<http://www.elcom.gr/sv2agw/agwpe.zip>

I also keep a [copy of AGWPE](#) on this site, but it may not be the most recent version.

The AGWPE setup file comes in "zip" format. If you need an unzip program, [visit the WinZip site](#) for the latest copy of WinZip.

2. Install AGWPE



Extract the zipped files into a new directory/folder. I always create a new folder for each version of AGWPE that I download. The program uses the same file names, and I want to be able to properly identify each program version and not confuse them.



You do not need to unzip any unneeded alternate language files.



Note that the main AGWPE program is called **AGW Packet Engine.exe**

You may want to create a Windows shortcut to this file on your desktop.

You may also want to add a link to **AGW Packet Engine.exe** on your Windows **Start Menu** by dragging and dropping a copy of the AGWPE shortcut icon onto the Windows **Start** button on the Task Bar at the bottom of your screen.

Do I need to install special drivers for parallel port PTT control?

Not any more. Earlier versions of AGWPE **did require** special parallel drivers, but they are **no longer necessary**. For the most recent versions of AGWPE, e.g. version 2001.38, it is **not necessary** to download or use the drivers.zip file from the AGWPE site despite what the AGWPE program **Help** file or the **AGWPE web site** may say.

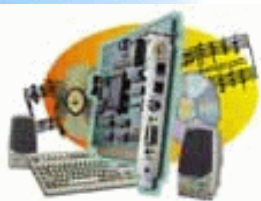
**Next
step:**

[Basic Setup for AGWPE \(1 sound card & one 1 radio\)](#) or

[Setup AGWPE for 2 radios](#) or

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Basic AGWPE Program Setup (One Radio & One Sound Card)

Before starting AGWPE, always close:



any programs that might be using the *serial or parallel port* you plan to use for PTT control



any programs that might be accessing the *sound card*

When you start the **AGW Packet Engine.exe** program for the first time, you will be greeted with a **Packet Engine** banner all in gold and a Software License Agreement which you must accept. The banner will disappear in a few seconds or you can click on it once to speed things up.

You'll then be surprised to discover that AGWPE does not put an open Window on your desktop nor will there be a button on the bottom Task

Bar. Instead, all you'll find is a **AGWPE** tower icon  on your


Windows System Tray at the bottom right of your screen. This icon is your only access to AGWPE when it is running! To help you find it, more recent versions of AGWPE have a yellow pop-up 'balloon' message pointing to the icon when AGWPE starts.

To configure AGWPE for the first time, click on the **AGWPE** icon 

to bring up AGWPE's pop-up menu:



1. First, Initialize the TCP/IP Interface

On the menu, click once on **Setup Interfaces**. On the resulting **Winsock & HTTP Interface Setup** window (next picture), make sure the **Enable Winsock TCP/IP Application Interface** box is check marked  (click in the box to checkmark it). This is essential for interfacing WinAPRS, APRSplus, AGWTerminalTCP and UI-View with AGWPE in TCP/IP mode. (It's not required for WinPack or the other AGW suite of programs.)



 [Click to enlarge](#)

Then press the **OK** button once and then again on the window telling you the change will take effect immediately.

2. Create an AGWPE Port:

A blank **RadioPort Selection** window will open. (If the **RadioPort Selection** window does not appear, click on the **Packet Engine** icon



again to re-launch the popup menu select **Properties**.) Press the

New Port button on the right. A message window will appear: "A New TncPort File Has Been Created". Click **OK**.

3. Define the Properties for Port 1

The Port Properties window should now appear. Here's a sample of how it might look after you fill in some of the boxes (see below for more information):



Click to enlarge

Make the following selections on the **TNC Setup** tab:

Select Port	enter the port where you will attach your PTT cable, e.g. COM1 or LPT1 .*
Serial Port/ Modem Baud Rate	ignore -- not used for sound cards
TNC Type	select ' Sound Card '.
TNC Control COmmands	select SinglePort if you will be using just one radio
TNC Radio Port Port Description	enter a description of your choice, for example, APRS on 144.39

* **Notes about serial port selections:**



To select a parallel port scroll to the bottom of the port list

If you are setting up a receive-only installation and don't want to tie up a real port for a PTT line you won't be using, the AGW software **will accept non-existent parallel port** assignments, but not non-existent serial ports.

4. Set The On-Air Baud Rate:

When you select "Sound Card" for your TNC type or if press the **Options** button in the middle of the **TNC setup** window (underneath **TNC subtype**), the program will bring up the **SoundCard Modem/TNC Setup** window which looks like this:



Click to enlarge

Since you will be using only one radio/one virtual TNC port, you will only be concerned with the on-air baud rate for the **Left Channel**. Set it for the rate you plan to use, i.e. **300** baud for HF SSB work; or **1200**, **2400**, **4800**, or **9600** for VHF/UHF work. Then press the **OK** button.

This will return you to the **Properties for Port1** window. All other selections can remain "as is" (use the default selections), including those in the **Tnc Commands** tab window. Press the **OK** button at the bottom of the **Properties for Port1** window. You should get a popup message telling you to restart the program, so.... click on the **Packet Engine** icon



once again and select 'Exit'.

Restart AGWPE. The **Packet Engine** icon



should once again

appear, but in addition you should now see a **TNC icon** next to it.



Problems?

If you don't see this **TNC icon**, you probably have a conflict with another program or device:



Make sure that the COM or LPT port you have select in AGWPE is not already dedicated to another device (for example, an internal modem or printer) or has been "captured" by another program (for example, your Palm Pilot's "Hot Sync Manager"). You'll have to resolve any conflicts by either closing the other program, disabling the device, or selecting another port for AGWPE's PTT control.



Make sure that no other program is running and using the the sound card.

For further help in resolving [port or device conflicts](#), go to the **Troubleshooting: Basic Configuration Problems** on this site.

If you want to change a setting in the Radio Port's configuration, click

on the AGWPE icon to call up the menu, select **Properties**, and then click on the radio port you want to change. Then click **OK** and pick up at step #3 above.

HINT: Any time you have trouble configuring AGWPE, it is often best to close AGWPE and just delete any **port*.ini** and **agwpe.ini** files in your AGWPE directory/folder. Then restart and re-configure AGWPE from the very beginning.

[Configure AGWPE for one sound card and 2 radios](#)

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Setting Up AGWPE for Two Radios

Beginning with version 2000.76, AGWPE is able to use the stereo capabilities of the sound card to **interface with two radios simultaneously!** One possible use of this would be to listen to the DX Cluster frequency on one radio while you are operating on a APRS or other packet communication frequency (including HF) on the other radio ... still without using any TNCs.

To make the appropriate cables, see [the 2 Radios Cable page](#).

To handle the second radio, you'll need to configure AGWPE as if it were "dual port" TNC:





Click on the **Packet Engine** icon  in the System Tray at the bottom of your screen to bring up AGWPE's pop up menu.



Click on **Properties** and then, with **Port 1** highlighted, click on **OK**.



When the Properties box opens make these changes:

-  Click on the **DualPort** choice in the far right column of the window.
-  The **Port2** field at the bottom of the window should now be active (turns from gray to white). In this field, type in a name of your choice for Port 2, e.g. the name of the radio and/or frequency and/or application. (You can also edit Port1's name at this time if you want.) See sample graphic:



[Click to enlarge](#)



Set the Baud Rate: Under the **TNC Sub Type** choice of **KISS Simple**, click on the **Options** button to bring up the **SoundCard Modem/TNC Setup** window that lets you change the "on air" baud rate for each channel. Here's an example:



Click to enlarge

By default, the "on air" rate is set at 1200 for both channels.

Note About PTT control: In earlier versions of AGWPE which did not have the two radio option, AGWPE used *both* the RTS and DTR pins on the COM or LPT port for PTT control. You could wire your PTT cable for either.

Current versions of AGWPE don't do this. If you select **SinglePort**, only the RTS pin will be used; the DTR pin isn't used. If you select, **DualPort**, the RTS pin will be used for the radio on port 1 (the left channel) and the DTR pin will be used for the radio on port 2 (the right channel).

How Do You tell your applications which AGWPE port/radio to use?

In **WinPack** for example, when you issue the connect command, put the port number between the connect command and the target station's callsign, for example:

C 2 KC2RLM

In **UI-View**, go to the **Setup** menu and then **Station Setup**. UI-View *transmits* on the ports you specify under **Unproto Ports**. For example, if you only enter **1**, then UI-View will only transmit your station beacon through AGWPE port 1. To specify multiple ports, enter e.g. **1,2**.

UI-View *receives* by default on all ports. To change that, go to the

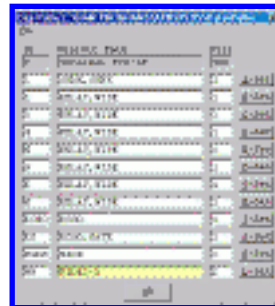
Setup menu and then **Comms Setup**. When you select a host mode of **AGWPE**, a **Setup** button will appear to the right of **AGWPE**. Press that button that to bring up the **AGWPE Setup** window. Then press the **Ports Mask** button to bring up the **AGWPE Port Mask Monitor** window. Check or uncheck ports to control which AGWPE ports UI-View will receive on.



Click to enlarge

WinAPRS has a special way of handling it. See the [WinAPRS setup page](#).

In **APRSplus**, use the **Commands: Unproto Paths** menu option (or Ctrl+Shift+U) to call up a list of UI paths. By default the TCP port for all path choices is set to 1, ie AGWPE port 1. To use AGWPE port 2, pick an unused line and change the TPC port to 2; also edit the path to one of of your choice. Now press the **Set** button to the right of the port you want to use. **It will then be highlighted in yellow**. Press the **OK** button.



Click to enlarge

Problems in setting up two ports in AGWPE? If you have any unusual difficulties in changing from single port to dual port operation, it may just be easier to:



exit from AGWPE

delete **all** **port*.ini** files and the **agwpe.ini** file in the AGWPE directory/folder

restart and re-configure AGWPE from the very beginning-- it doesn't take long.

Possible Problems with Stereo Channels and 2 Ports/Radios



Some users have reported the RX audio from one channel may somehow "spill over" on to the other channel. The only reported solution is to reduce the radio's RX volume on the originating channel/port, so that it is just loud enough for AGWPE to decode -- watch the green blinking pixel in the modem icon. Ideally this will stop the spill-over.



George SV2AGW says there may be a problem running AGWPE in 2 port sound card mode if your soundcard is not full-duplex capable. Most cards are, but if yours is not, then while one channel transmits, the other channel will stop receiving.

If you want to check if your soundcard is full-duplex:

1. Run AGWPE (using the soundcard as a TNC, of course)

2. Run the Windows **Sound Recorder** program:

Start/Programs/Accessories/Entertainment

3. Press the **record** button.

If your soundcard works in full-duplex mode it will start recording. If it does not, you will get a pop-up message warning you that your soundcard is in use by another program, i.e. AGWPE.

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Setup AGWPE to Use 2 Sound Cards

AGWPE versions 2000.78 and higher now let you install a **second** sound card in your computer and configure it to be used for sound card packet use only. This lets you use the first sound card for Windows programs and devices, such as Windows sounds and a CD player, while your second sound card is dedicated to AGWPE.

Ideally your second sound card will be "plug-and-play" and Windows will automatically recognize it when you boot up after installing it. Otherwise you will need to use the Windows **Control Panel** option, "**Add New Hardware**", to tell Windows about the sound card and install the appropriate drivers. After the second sound card is installed in Windows, AGWPE should automatically recognize both cards.

To select the sound card you want to use for sound card packet, call up AGWPE's main menu, select **Properties** and then, with **Port 1** highlighted, click on **OK**. The **Properties for Port1** box will then open. Under the **TNC Sub Type** choice of **KISS Simple** there is an **Options** button. Click on the **Options** button to bring up the **SoundCard Modem/TNC Setup** window. At the bottom of this window is a **Sound Card Selection** dialogue box where you can select the sound card you want AGWPE to use. Click on the down arrow to the right of the box to see your choices.



Click to enlarge

Typically, Windows will use the first sound card listed. If so, then you would tell AGWPE to use the second sound card. Trial and error may be the only way to sort this out: temporarily attach speakers to the LINE OUT jacks on each sound card to test which sound card is being used by Windows and which is being used by AGWPE.

Note that AGWPE will also report other devices that are not sound cards, so be sure NOT to select one of those. If you do, you will receive an error message: " Your Sound Card Drivers can not Support the Wave Format".

Later on when you set the volume settings for the card, be sure to select this card in the [Mixer Device](#) field. See [Window Volume Control Settings page](#) on this web for instructions.

Possible Bug? One user has reported Windows lock-ups when trying to use 2 sound cards of the same manufacturer or the same drivers.

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Interface: Computer-to-Radio Cables Getting Started

To connect your radio to the sound card, you'll need an interface consisting of three (3) cables, one each to handle the RX, TX, and PTT functions. If you want to use your sound card with **2** radios, you'll need a more complicated interface. See [cable2radio.htm](#)

The basic AGWPE radio-to-computer interface is the same as one as would be used for other sound card digital programs such as [PSK31](#) or Slow Scan TV. So, if you already have such an interface, you probably can just use that for AGWPE.

You can either build your own interface or you can also purchase [kits and pre-assembled interfaces](#).

If you build your own:



Make sure you build the interface long enough to reach from your radio to your computer sound card jacks, especially for fixed position radios and computers!



Be sure to use cables with a shield in them to help prevent stray RF (radio frequencies) from entering the cables.



Try to use isolation transformers in the Receive (RX) and Transmit (TX) Audio cables; and an opto-coupler/photo-transistor in the PTT cable to electrically separate the radio and computer.



At least two of the cables will need small circuits. You'll find other variations at [WM2U's PSK31 site](#). Circuit components should be readily available at local electronics store or online. For example, you'll find some very attractive prices for components at [Buck's online store](#).

Going beyond my simple circuits, you'll find instructions for home-brewing the "Cadillac of sound card interfaces" in the March 2002 QST, p 31. Bob Lewis describes how to build an interface for ICOM HF rigs with many deluxe features.

Special Tip: If you want the flexibility of easily switching your interface between different radios, you might be interested in this [cable construction trick](#).

[Kits and Pre-Assembled Interfaces](#)

[RX \(Receive\) Audio Cable](#)

[TX \(Transmit\) Audio Cable](#)

[PTT \(Push to Talk/Transmit\) Cable](#)

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Kits and Pre-assembled Interfaces

If you don't want to build your own computer-to-radio interface, you can purchase a pre-assembled interfaces .. or buy a kit with all the necessary parts:

Interface Kits



Bux CommCo™ (Buck Rogers, K4ABT) sells the [RASCAL kit](#), which has all the parts and cables you'll need to make a well-designed external interface to your radio (various versions for various radios). The price was US\$27 the last time I checked and includes shipping to US addresses (extra for non-US). The kits use isolation components on each line...a very nifty extra. It would be difficult to purchase all the components on your own for such a price!

Pre-assembled Interfaces



Bux CommCo also sells completely assembled [RASCAL interfaces](#) for US\$49.



Tigertronics sells the [SignalLink™](#). This pre-assembled interface features an auto-PTT circuit, so you don't need to use a COM or LPT port for a PTT activation signal, a feature that might be of particular value to anyone who needs those ports for other devices! It does require some external power to operate [6.75 - 15 VDC @ 10 ma (max)], but you may be able to get this from the mike connection on some radios; otherwise from another DC power source, such as a cigarette lighter jack.



West Mountain Radio sells both the [RigBlaster and RigBlaster Nomic](#) pre-assembled interfaces. The RigBlaster lets you keep both your microphone and sound card connections attached to the radio's microphone jack. The Nomic (No Mike) doesn't have that feature, but it is smaller in size, less expensive, and doesn't require a power connection. See [West Mountain Radio's web page](#) for additional information and current pricing.



MFJ also sells a nifty pre-assembled interface in two models: the [1275](#) (round connector) and [1275M](#) (modular connector).

Please [contact me](#) if you know of other sources for kits or pre-assembled interfaces.

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Receive (RX) Audio Cable

Radio RX Audio to Sound Card "Line In" or Microphone Jack

For Receive (RX) audio from the radio, normally you will want to make a cable to plug into the sound card's LINE IN jack. It can handle a radio's typical RX audio voltage. If you need to use the sound card's more sensitive MIC jack, [see below](#) for a schematic that adds in a voltage divider circuit.

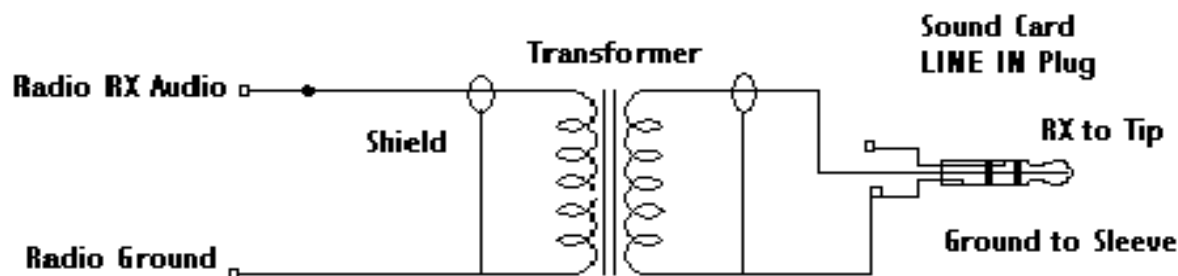
In this cable, I recommend the use of an in-line transformer to electrically separate the radio and computer grounds for two reasons:

-  to eliminate any potential hum on the signal
-  to reduce the risk of any damage to the devices from any difference in voltage potential that might occur in the future

I also recommend the use of shields on the cables to reduce the risk of any RFI (Radio Frequency Interference) getting on the RX signal.

Here's the schematic:

Receive Audio to Sound Card LINE IN Jack



To build your RX cable:

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Use a cable with a single insulated wire and a braided shield. Small coaxial cable like RG-174U should work well; even RG-58U would work. The shield can act as ground line if you are using a transformer. If you aren't using a transformer, attach the shield at the radio ground only, and not at the computer/sound card ground.



Sound card connector: You will need a plug that will fit the sound card LINE IN/Microphone jack, probably a 1/8" (3.5mm) **stereo** 3 conductor male mini-plug (e.g. Radio Shack part #274-284). Do not use a mono 2 conductor plug.



Radio connector:

- If you need your radio's "pinout" information, you'll probably find it at [Buck's packet site](#). Remember that in addition to the RX line, you will also need to attach the [TX](#) and [PTT](#) lines to the radio, so all three inputs could be sharing the same plug.
- **Mobiles or Base Radios:** You can use either the microphone connection or preferably the radio's special "data" plug jack, if it has one. Or you can use the speaker jacks.

For Receive (RX) audio it's best to use the pin on the radio's data jack, since it provides a constant audio output level and -- usually -- no squelch (AGWPE needs to hear an un-squelched signal). If you use the radio's microphone or speaker jack instead, remember the audio output level will be affected by both the radio's "volume" and "squelch" settings and not having these set correctly is often a source of problems for AGWPE.

- **Handhelds:** Most HTs have a 'Speaker' jack that requires a 1/8" (3.5mm) mono (2 conductor) mini-plug. If your radio's user manual says to use a stereo plug instead of a mono plug, be sure you do.

Check either [Buck's packet site](#) or [Gloria's KA5ZTX site](#) for pinouts and any necessary resistor and capacitor required for the PTT and TX lines into your HT.



Transformer: The type of transformer is determined by the source of the RX audio. If you take it from the radio's microphone or data jack, you'll use a 600 to 600 Ohm (1:1) transformer. If you take it from the radio's speaker jack (8 Ohm impedance), you'll need a 1000:8 transformer.

Isolation or audio transformers can be obtained from most electronics parts stores, e.g. Radio Shack #273-1374 for a 1:1 or #273-1380 for a 1000:8. (Expert hint: for 1:1 transformers, Peter PE1MHO/G7ECN says another source is old internal modems that a computer store might be glad to give you.)

Be sure you use the proper lead wires on the audio transformer as identified by any accompanying schematic for the transformer or by using an Ohm meter to determine the leads for the same coil (windings) of the transformer. Note that if the transformer has 6 leads, two will be center tap wires that won't be used. (Don't cut them until you know you have the 4 other leads correctly wired.)

One lead from the **primary** coil of the transformer will connect to the **center conductor (tip)** of the **sound card** plug. The other lead from the **primary** coil will connect to the sleeve (outer conductor) of the **sound card** plug. In this circuit, it doesn't matter which lead connects to the tip and which connects to the sleeve, so long as they are from the same coil. (If you are using a 1000:8 transformer, it is important to connect the 1000 Ohm primary coil of the transformer to the sound card and not the radio.)

On the **secondary** coil of the transformer, one lead will attach to the RX pin of the **radio**. The other lead will attach to **radio** ground. Again, it doesn't matter which of the connects to the radio RX and which to radio ground, so long as they are from the same coil. (Again, if you are using a 1000:8 transformer, it is important to connect the 8 Ohm secondary coil of the transformer to the radio and not the sound card.)



The **middle conductor (ring)** of the sound card plug should be left **unwired**, unless you are [building a RX cable for a second radio](#).



When you're done, tape a "Line In" label on the sound card end of the RX audio cable so that you don't confuse the RX and TX cables.

Circuits without an isolation transformer:

You will find other schematics (at various web sites and even in AGWPE [Help](#)) that do not use isolation transformers; in fact I once had such a schematic on this site. The danger with any circuit directly connecting the computer and radio is that the devices could develop different ground potentials which could lead to damage to the devices. This risk is inherent for both a dual wire connection (RX-to-RX and Ground-to-Ground) or a single wire connection (RX-to-RX, no common ground wire). Either method provides a route for current that could develop because of different potentials. For this same reason, never connect the shield of a wire to both both devices; ground it only to one device.

If you're curious, there's an interesting discussion of proper connections of shields and grounding at:

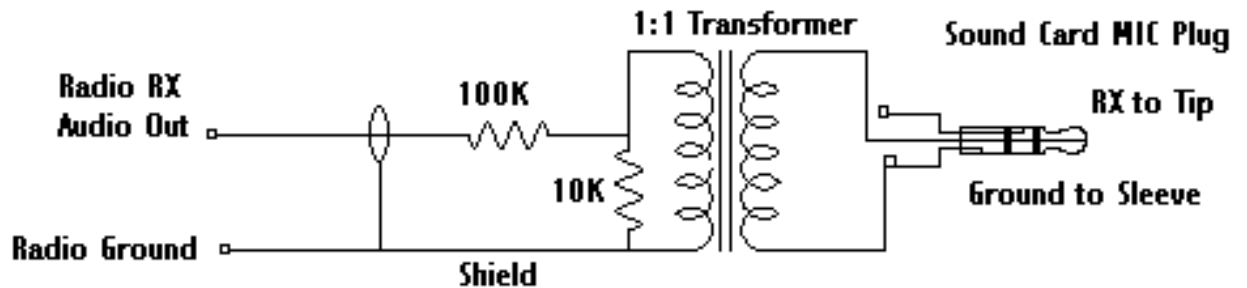
http://www.epanorama.net/documents/groundloop/cable_shielding.html

RX Audio in through the "Microphone" jack on your sound card

If you want or need to use the sound card's Microphone jack instead of the LINE IN jack, then you will probably need to add an attenuation circuit on the RX audio line so that you do not overdrive the sound card. The exact attenuation will depend on the maximum output voltage of your radio RX line **and** the maximum input voltage on the MIC jack of your sound card. (The Sound Blaster card I have has a maximum of 200 mVpp on the Microphone jack, where the Line In jack has a maximum of 2 Vp-p.)

Here's a schematic for a 10:1 attenuation circuit that should work fairly well in many setups. The 1:1 audio transformer provides an electrical separation of the computer from the radio.

Receive Audio to Sound Card MIC Jack with 10:1 Attenuation



When you're done, tape a "Microphone" label on the sound card end of this RX audio cable so you don't confuse it with the "Line in" or "Line out" cables.

Also note this hint from George SV2AGW: If you use the MIC input, do not use the **BOOST** function if your sound card offers it. You can look for this in the [Volume Control program](#) (double click on the  icon); look for an **Advanced** button under the Microphone volume slider.

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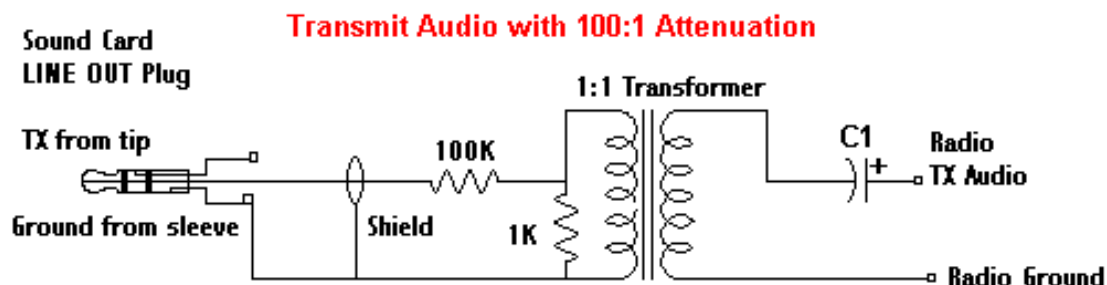
Transmit (TX) Audio Cable

Sound Card "Line Out" to Radio TX Audio

The TX audio cable is a little more complicated. Normally, this cable must have a circuit to attenuate the voltage leaving the sound card, otherwise the radio's transmit circuit will be overdriven. The exact attenuation will depend on both your radio and sound card. An approximation is a 100:1 attenuation (40 dB) which will reduce the sound card output level (max. 2 Volt _{p-p}) down to the level your radio normally would expect for microphone (often a max. of 20 millivolt _{p-p}). For example, a 50:1 attenuation might have worked better for me, since I use my my radio's data jack which has a maximum input voltage of 40 mV _{p-p}.

Don't Overdrive Your Radio! If a sound card (or a TNC) overdrives a radio's input circuit (i.e. is too loud), the radio will begin to distort the true packet tones as it tries to limit the signal to a maximum deviation of approx. 5 kHz. The attenuation circuit described on this page attempts to prevent such overdriving and distortion. Interestingly, a packet station that is properly adjusted with 3.75 kHz of deviation (+/- .25) should sound softer than channel noise!

Here's a schematic for the attenuation circuit:



C1 = optional capacitor blocks DC voltage; may be required for radios sharing TX and PTT lines, e.g. hand held radios

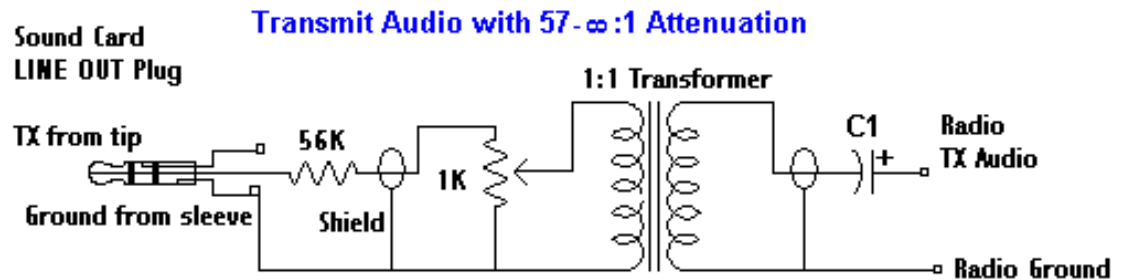
The 1:1 audio transformer can be obtained from either parts stores (e.g. Radio Shack #273-1374) or Peter PE1MHO/G7ECN says another source is old internal modems that a computer store might be glad to give you.

The value of capacitor C1, if used, is often specified in the radio's user manual in the section on MIC/Speaker accessory plug wiring. [The value will depend on the input type of the radio... resistive, capacitive, or direct coupling. Resistive will require a higher value cap (4 to 10 uF), while capacitive a bit less. Direct I/O are best coupled at 1 uF, as RF might become a problem if they go too high in capacitance.]

Option #1: Instead of the two resistors, you could use a 4K7 (4.7K) Ohm variable resistor (potentiometer/pot). The pot would actually give you more control over the attenuation, although a pot is bulkier and perhaps not as accurate. (Perhaps the best -- but not easiest --

solution is to temporarily wire in a pot, test for the correct voltage reduction, and then wire in two fixed resistors that produce the correct ratio reduction.)

Option #2: Or here's a schematic of a circuit that combines a pot with a fixed resistor to give the pot a less delicate range of settings and make is easier to adjust:



C1 = optional capacitor blocks DC voltage; may be required for radios sharing TX and PTT lines, e.g. hand held radios

To build your TX cable:

- ✚ Sound card connector: You will need a plug that will fit the sound card LINE OUT jack, probably a 1/8" (3.5mm) **stereo** 3 conductor male mini-plug (e.g. Radio Shack part #274-284 -- pkg. of 2). Do not use a mono plug 2 conductor plug.
- ✚ Radio connector:
 - If you need your radio's "pinout" information, you'll probably find it at [Buck's packet site](#) or [Gloria's KA5ZTX site](#).
 - **Mobiles or Base Radios:** You can use either the microphone connection or preferably the radio's special "data" jack, if it has one. You'll be using the same connector as the one used for your PTT and RX line, unless you're using the speaker jack for RX audio).
 - Handhelds:** TX audio will go to the radio Microphone jack, which usually require a 3/32" (2.5mm) stereo (3 conductor) or mono (2 conductor) sub-mini plug. If your radio's user manual says to use a stereo plug instead of a mono plug, be sure you do. You'll also be feeding your PTT line into this plug.
- Check your radio's instruction manual or either of the web sites mentioned above for pinout information and any necessary resistor and capacitor required for the PTT and TX lines into your HT.
- ✚ Use a cable with a single insulated wire and a braided shield. Small coaxial cable like RG-174U should work well; even RG-58U would work.
- ✚ Be sure you use the proper lead wires on the audio transformer as identified by any accompanying schematic for the transformer or by using an Ohm meter to determine the leads for the same coil (windings) of the transformer. Note that if the transformer has 6 leads, two will be center tap wires that won't be used. (Don't cut them until you know you have the 4 other leads correctly wired.)

One lead from the **primary** coil of the transformer will connect to the **center conductor (tip)** of the **sound card** LINE OUT plug by way of the pot/voltage divider circuit. The other lead from the **primary** coil will connect to the sleeve (outer conductor) of the **sound card** LINE OUT plug. In this circuit, it doesn't matter which transformer lead connects to the sound card LINE OUT and which connects to sound card ground, so long as they are from the same

coil/winding of the transformer.

On the **secondary** coil of the transformer, one lead will attach to the TX pin of the **radio**. The other lead will attach to **radio** ground. Again, it doesn't matter which of the connects to the radio TX and which to radio ground, so long as they are from the same coil/winding of the transformer.



The **middle conductor (ring)** of the sound card plug should be left **unwired**, unless you are **building a TX cable for a second radio**



When you're done, tape a "Line Out " label on the sound card end of the TX audio cable so that you don't confuse the RX and TX cables.

Circuits without an isolation transformer:

You will find other schematics (at various web sites and even in AGWPE [Help](#)) that do not use isolation transformers; in fact I once had such a schematic on this site. The danger with any circuit directly connecting the computer and radio is that the devices could develop different ground potentials which could lead to damage to the devices. This risk is inherent for both a dual wire connection (RX-to-RX and Ground-to-Ground) or a single wire connection (RX-to-RX, no common ground wire). Either method provides a route for current that could develop because of different potentials. For this same reason, never connect the shield of a wire to both both devices; ground it only to one device.

If you're curious, there's an interesting discussion of proper connections of shields and grounding at: http://www.epanorama.net/documents/groundloop/cable_shielding.html

Handheld Radios: Did you know?

Most handheld radios use the **microphone jack** to feed **both** the TX audio signal (AC) and the PTT signal (DC) into the radio.

To make sure the TX audio signal goes into the radio and not back out the PTT line, **a resistor is often put in the PTT line** (AC will follow the path of least resistance).

And to make sure DC power doesn't go back up the TX audio line to ground, **a capacitor is often put in the TX audio line** (capacitors block the DC but allow AC to pass). If your handheld radio goes into constant PTT when the plug is put in its MIC jack, the lack of the capacitor is often the answer. (Note that the schematic above includes such a capacitor for just that reason. It's a good precaution to take to block any DC on the TX line.)

These components still need to be used in AGWPE cables for handheld radios.

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PTT (Push to Talk/Transmit) Cable

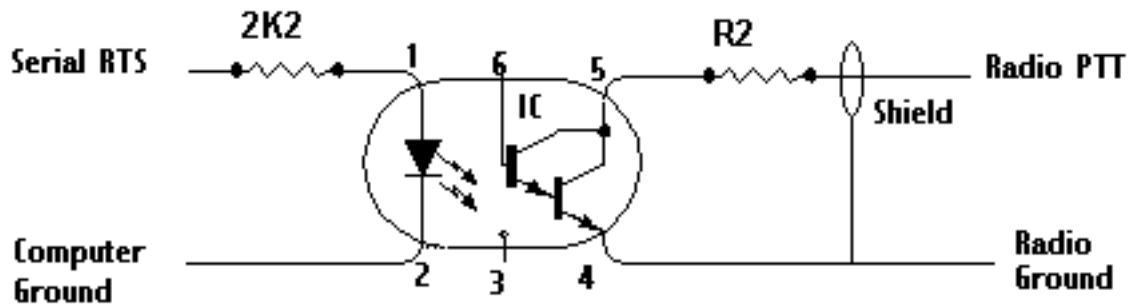
AGWPE will generate the Transmit Audio, but you also need a way to open the radio's PTT circuit so that the audio can be transmitted. AGWPE and other sound card programs such as PSK31 provide for this by sending a signal to the RTS pin of the serial (COM) port or parallel (LPT) port on your computer. This gives you several options:

1. [build a cable with an isolated 'gate' circuit](#) that opens the radio's PTT circuit when it receives a signal from the RTS pin. You can use this cable on either your serial or parallel port.
2. use the cable above with a [serial-to-USB port adapter](#) to use your computer's USB port instead of the serial or parallel port.
3. use the voice activated (VOX) PTT circuits if your radio has one. If it works, you won't need a separate AGWPE-activated PTT cable. (Although you need to guard against room/computer noises if the VOX also opens the microphone.)
4. [build a TX audio-activated circuit](#) to achieve the result as #3.

A. Building A Cable With An Isolated Gate Circuit

Here's a 'gate' circuit for a single port (one Radio) AGWPE setup which uses a common phototransistor/opto-coupler as the gate:

PTT Circuit Using Optocoupler



IC = optocoupler/phototransistor

Part # 4N25, 4N29, 4N33, 4N37, ECG 3084, PS2601

Pin 1 has small circle embossed above it.

R2 = optional resistor for radios with shared TX & PTT pin, e.g. hand helds

- ✚ U.S. outlets for parts include [Bux Commco](#), [Radio Shack](#), [Digikey](#), and [Newark Electronics](#).
- ✚ Use a cable with a single insulated wire and a braided shield. Attach the shield on each side of the opto-coupler to either the radio or computer ground, but **do not connect the grounds together**.
- ✚ If you have a **DB9 Serial** port (COM), use **RTS (Request To Send) pin # 7** for PTT control on a one radio cable.

Do not use the #4 DTR (Data Terminal Ready) pin for single port PTT control despite what the AGWPE [Help](#) file or AGWPE web site may say. The DTR pin is used by AGWPE only if you [interface a second radio](#) and use AGWPE's [Dual Port](#) feature to control PTT on a radio attached to AGWPE port #2. DTR will not be triggered if AGWPE is set to use only a single port/radio.
- ✚ If your serial port uses a **DB25 COM** connection (rarer), use RTS pin 4 for PTT control. Note this is the pin for a DB25 *serial (COM)* port not a DB25 *parallel (LTP)* port.
- ✚ If you want to use the parallel port (**DB25 LTP**) for PTT control instead of the serial port, use LTP pins 2 or 3 for the PTT line and any pin 18 thru 25 for the GROUND.
- ✚ Check either [Buck's packet site](#) or [Gloria's KA5ZTX site](#) for radio pin outs and the location of the PTT pin.



Note on handheld radios: Most handheld radios use the microphone jack to feed **both** the TX audio signal (AC) and the PTT signal (DC) into the radio. To make sure the TX audio signal goes into the radio and not back out the PTT line, you will need to include a resistor in the PTT line; AC will follow the path of least resistance and stay off the PTT line. See your handheld's user manual or consult [Buck's packet site](#) for resistor values and circuit information.



A Special Trick: To make it easy to **use either the serial port or printer port**, Bill, WB6JAR, came up with this clever design: run a short pigtail cable from the cable's serial DB9 connector to a parallel DB25 connector.

- Connect the serial's pin 7 (RTS) to the parallel's pin 2 (or 3)
- Connect the serial's pin 5 (GND) to the parallel's pin 18 (or 19-25)
- Only connect one DB connector to the computer at a time.

B. Serial-to-USB Adapters

It's becoming easier to find a fairly inexpensive serial-to-USB adapter with the increased use of PDA (Personal Data Assistants, e.g. Palm Pilots™ devices) and USBs on computers. In fact some computers now come with USB ports but no serial port. If this is your case or if you prefer to make use of the USB port to leave your serial and parallel ports free for non-AGWPE purposes, a serial-to-USB adapter may work for you.

To use a serial-to-USB adapter:



first install the adapter driver



then go to the Windows **Device Manager** (**Start: Settings; Control Panel: System**) and click on the **+** next to **Ports** to expand the list and see which COM port the adapter is using



[change your AGWPE Port setting](#) to use the adapter's COM port



plug your serial port PTT cable into the USB adaptor

I had mixed results with two such adapters. The first adapter I bought, a [Belkin](#) for about US\$30, would not work on either my desktop or laptop. I suspect that Belkin was not at fault; it was more likely a problem with my computer hardware or my version of Windows or the driver for WinXP.

I then bought an [IOGear adapter \(GUC232A\)](#) (apparently made by ATEN International CO.,LTD.) for about US\$30. It works fine on my desktop (it uses COM5) ... but it will not work on my laptop.

Note: Some users have reported problem with USB adapters receiving changing COM port assignments on each computer boot-up.

So the point is that it's possible such an adapter may work on your computer, but you may have to experiment to find one.

Here's another possible USB choice: <http://pfranc.com/usb/usb.shtml>

C. TX Audio-activated Circuit

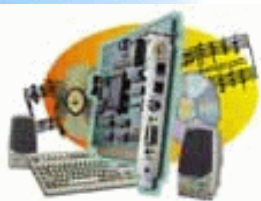
It's also possible to open the PTT without a COM, LPT or USB port connection by using a special circuit that opens the PTT when it "hears" tones on the TX audio line.

Stephen Smith's, WA8LMF, [Tone Keyer web page](#) describes how to make such a device. If you need your COM or LPT ports for other devices, you should look into this creative solution.

Another option to avoid using a COM or LPT port is the [Tigertronics Signalink pre-assembled unit](#) which also uses a TX audio tone-activated PTT circuit.

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Interfacing to 2 Radios with 1 Soundcard

Starting with version 2000.76, AGWPE can use the sound card to interface with TWO different radios at the same time -- no TNCs required. It does this by using the left and right stereo channels of the sound card, in effect making the sound card a "dual port" TNC. (see [AGWPE: 2 Radio Setup](#) on this site.)

This means you can have 2 different packet programs running, each one sending and receiving data with a different radio on a different frequency. If you use WinAPRS, UI-View, or APRSplus, you could have one radio tuned to the local APRS frequency and the other to the local DX cluster frequency or to an HF APRS frequency.

To run a second radio with the sound card, you'll need to make use of the **ring** on the stereo sound card jacks; and the **DTR** pin on the serial/parallel port for PTT control.

Here's the pin and plug assignments for "dual port" sound card use:

AGWPE Port	Card Channel	Stereo Plug	PTT Pin	DB9 serial pin # GND		DB25 serial pin # GND		DB25 Parallel* pin # GND	
1	Left	Tip	RTS	7	5	4	7	2 or 3	18-25 (any)
2	Right	Ring	DTR	4	5	20	7	8 or 9	18-25 (any)

NOTE 1: Do not use the computer ground pin unless:



You are wiring the shield to the computer ground instead of the radio ground (don't wire to both!); or



You are using an isolation transformer and need to wire one side to computer ground.

NOTE 2: If you are running Windows 2000/NT, as of version 2001.38 you can not use the **parallel (printer)** port for 2 radio packet. You must use the serial port. The parallel port option will work only with Windows 95 and 98 (and perhaps Windows ME and XP, but I haven't test it.)

1. RX and TX Audio Cables

The [RX Audio Cable](#) and [TX Audio Cable](#) pages of this site describe how to make cables for a radio which would use the **left** channel of the sound card and Port 1 in AGWPE. Such cables uses the **tip** of the stereo TX and RX plugs and the **RTS** pin on the serial/parallel port plug for PTT control. If you already have a set of cables, they are probably wired like this.

If you want to use a second radio with the sound card, you would attach a second audio cables to the **ring** of the stereo plugs (the **right** channel of the card or port 2 in AGWPE). Here are two different approaches for the audio cables:



Cheaper but harder -- wire it yourself: Using the cable schematics on the [RX Audio Cable](#) and [TX Audio Cable](#) pages, add a second cable (single wire shielded) to each sound card plug. The single insulated wire will run from the unused **ring** (middle conductor) of the sound card plug to the proper pins (RX or TX) on radio #2. The shielding should attach to the ground on the radio but NOT attach to the ground on the computer.

You'll need to make this alteration for **both** the RX **and** TX Audio plugs. You'll also need to add a separate attenuation circuit (see [TX Audio Cable](#)) for the second TX audio cable.



Easier but a little more expensive -- buy two "Y" adapters (Bill's, WB2JAR, idea): Rather than try to squeeze the wires from both radios into the same sound card plug, use a "Y" adapter. The "Y" plugs into the sound card jack and will accept two sets of audio cables, one for each radio, into the arms of the 'Y'.



Separates left and right-channel signals. Has a 3.5mm stereo phone plug & two 3.5 mm mono phone jacks.

Bill suggests Radio Shack part #274-375 (\$3.59 each) which even does the channel separation for you! Of course, you'll need 2 of these adapters -- one for the sound card's LINE IN jack (RX audio) and one for the sound card's LINE OUT jack (TX audio).

These adapters accept simple **mono** plugs into their jacks. No need for stereo/3 line cables and no need to worry about "tip" or "ring" assignments. The adapter handles that.

The **silver** plated jack on the 'Y' is used for the cable coming from **radio #1**. It's wired to the **tip** of the adapter's stereo plug and provides the connection to the **left** channel of the sound card (AGWPE Port 1).

The **gold** plated jack on the 'Y' is for the cable coming from **radio #2**. It's wired to the **ring** of the adapter's stereo plug and provides the connection to the **right** channel of the sound card (AGWPE Port 2).

If you come up with still another method for the audio cables, [let me know](#).

2. PTT Cable

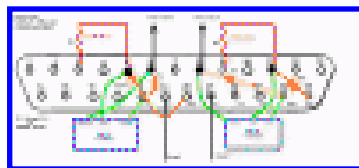
To control the PTT on the second radio, you'll need to add a wire that will run from the **DTR** pin of the serial or printer port to the radio and includes a second PTT circuit (see [PTT Control cable page](#)).

I haven't heard of an elegant way to interface 2 PTT cables to the same COM (or LPT) port, so you might try one of these methods:



A. Wire both PTT cables into the same DB25 (or DB9?) connector. Here's a diagram that Bill, WB6JAR, created for a DB25 for the printer port. (I don't know if you could shoehorn all of this into a DB9 for the serial port.) To simplify the soldering, he broke off some of the pins going out of the DB25 (that would normally plug into the computer) and used the resulting stubs inside the DB25 as solder points. The downside of 2 cables into one DB connector is that, if you want to use just one radio, the PTT cable for the second radio will always be attached to the DB25 and this might be cumbersome.

Click on the graphic for a larger view. If you do, use your browser's **BACK** button to return to this page.



☞ [Click to enlarge](#)



B. Make a two cable adapter from DB9 plugs. This "Y" arrangement allows you to split the RTS and DTR signals to different DB9 male plugs. You can then plug [standard PTT control cables with DB9 female jacks](#) into the DB9 males plugs.

A trick: solder the DTR wire to the RTS pin in the DB9 male for radio #2. That way, you can use either radio's PTT control cable on either male plug. Both male plugs will be sending the PTT signal on RTS pin #7, even though radio #2 is really getting its signal from the DTR pin on the computer.

This "Y" arrangement also lets you easily remove the second PTT cable if you're not using it.

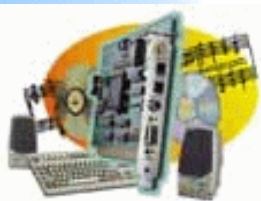


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3. Finally, don't forget to [change AGWPE to a "dual port"/2 radio setup](#).

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Windows: Enabling the TCP/IP Protocol

AGWPE use the Window's **Winsock TCP/IP Application Interface** to communicate with many packet application programs, including WinAPRS, APRSplus and UI-View. For this interface to work, TCP/IP must be enabled in **both** Windows and AGWPE:



1. Enabling TCP/IP in Windows : To quickly check if TCP/IP is enabled in Windows, go to the **Control Panel** (press the **Start button**, then **Settings**, then **Control Panel**). Then select **Network** and look in the list of installed components (use the scroll bar if you can't see the full list). You should see **TCP/IP** or **TCP/IP > Dialup Adapter**. In more recent versions of Windows, you may have to right click on a component and then select **Properties**

If it's not there, first make sure that you have **Dialup Adapter** on that same components list. If it's not, you can install it as follows: from the **Control Panel**, select **Add/Remove Programs**. Then click on the **Windows Setup** tab and then select (one click) **Communications**. Now press the **Details** button and then click on/check mark **Dial Up Networking**. Press the **OK** button twice. (You then may be prompted for your original Windows installation disks for the required files.)

Now, with the **Dialup Adapter** installed, install the **TCP/IP** protocol. Select **Control Panel** again, then **Network**. Now select **Add**, then double click on **Protocol**, then **Microsoft**, then **TCP/IP**, then **OK**.

2. Enabling TCP/IP in AGWPE: This was previously covered on the [AGWPE: Basic Setup](#) page. But to repeat ... check that AGWPE's **Enable Winsock TCP/IP Application Interface** is set to **active**: Open the AGWPE menu, click on **Setup Interfaces**, and then on **Winsock Interface** tab, make sure there is a check mark in the box next to **Enable Winsock TCP/IP Application Interface**. [Other programs, such as WinPack, can use the Window's **DDE Interface** instead to communicate

with AGWPE. DDE requires no special AGWPE settings.]

Testing the TCP/IP Setup in Windows

Thanks to Roger Barker, G4IDE, for the following: If you have any doubts that the TCP/IP interface is working properly, here's a very simple way to check it:

1. Start AGWPE. Click on the Packet Engine icon on the system tray. On the menu, click on **Setup Interfaces**. Make sure **Enable Winsock TCP/IP Application Interface** is checked. Click **OK** to close the menu
 2. Click again on the AGWPE icon and then click on **About**. The last two lines should say "**SocksAPIServer Active**" and "**SocksAPIConnections 0**".
 3. Run the Win95 Telnet program, TELNET.EXE. Quite a lot of people don't realize it exists; it's in the main Windows folder.
 4. From the menu, select **Connect, Remote System**; then Host Name: **127.0.0.1**, Port: **8000** (type 8000 over the menu choices); Term Type: **VT100**
 5. If the program title bar changes from **Telnet - [None]** to **Telnet - 127.0.0.1**, then everything is fine. TCP/IP is working in Windows. Go to #6.
- If instead you get a message "**Could not open a connection to 127.0.0.1**", then there's something wrong with your Windows TCP/IP set-up. Review the steps at the top of this page.
6. Click the Packet Engine icon again, and select **About**. It should now say "**SocksAPIConnections 1**". TCP/IP is working in AGWPE.
 7. Go back to In Telnet. Select **Connect**, then **Disconnect**, and close the program. Another check on **SocksAPIConnections** in AGWPE should show 0."

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Update Windows

A. Windows 95, 98 and 2000 Users



Make sure you have the most recent version of the Window's "Common Controls". If you've installed Internet Explorer (IE) version 5.0 or later, the controls should have been installed. If you haven't upgraded to IE 5.0 or later -- or want to check that the controls are installed -- [visit Microsoft's 50comupd.exe site](#).



Make sure you have the most recent drivers for your sound card. You will need to visit the sound card manufacturer's web site to verify this.

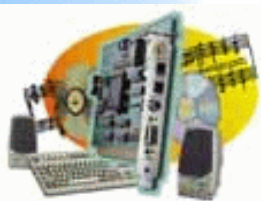
B. Windows 95 Users only



You must have the [Winsock 2 update](#) installed, otherwise the TCP/IP interface will not work correctly with AGWPE. First make sure you have the [TCP/IP Protocol installed in Windows](#), then apply the update.

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Windows: System-wide Sound and Multimedia Settings

To get AGWPE to work, Window sound and multimedia settings must be configured correctly. (There is a separate page on this site for [settings for the Window Volume Control program.](#))

A. Volume Control Icon



It's helpful to have this icon in the System Tray (bottom far right of your screen). It lets you quickly access the volume and audio source settings of the sound card when adjusting AGWPE.



In Windows 98 it's , **Start: Settings: Control Panel: Multimedia: Audio** tab and check ☒ **Show volume control on the taskbar.**



In Windows ME it's: **Start: Settings: Control Panel: Sounds and Multimedia: Sounds** tab; **Sound Volume** box and check ☒ **Show volume control on the taskbar.**



In XP, it's **Start: Control Panel: Sounds and Audio Devices: Volume** tab and check ☒ **Place volume icon in the taskbar.**



I'm not sure how it's done in Windows 95, but it's probably very similar to Win 98.

B. No Sounds

On some computers you may have conflicts between a program and Windows itself over the use of the sound card. (A typical crash message is "an application **caused an invalid page fault in module WINMM.DLL**"). To avoid this, try turning off Windows' sounds.



In Windows 98 it's: **Start: Settings: Control Panel: Sounds: Schemes** field = **No Sounds**



In Windows ME it's: **Start: Settings: Control Panel: Sounds: Sound Events: Scheme** = **No Sounds.**



In XP, it's **Start: Control Panel: Sounds and Audio Devices: Sounds** tab: **Sound Scheme** field = **No Sounds.**



I'm not sure how it's done in Windows 95, but it's probably very similar to Win 98.

C. Other Multimedia Properties



Windows 95: There is little else to set in the **Multimedia Properties** window. I'm not sure if the Recording **Preferred quality** setting makes a difference. You can try **CD Quality**. Click on the **Apply** button (if not gray-ed out) and then the **OK** button to close the window.



Windows 98: With the **Audio** tab showing:

- Click first on the **Playback Advanced Properties** button. On the resulting **Speaker** tab, select **Desktop Stereo Speakers** (or lap top mono, maybe). According to George SV2AGW, anything else will distort the TX sound.
- Then click on the **Performance** tab. According to George, **Hardware Acceleration** should be set at least **one stop above None**, but try **Best** at first to see if your computer can handle it. **Sample Rate Conversion Quality** must be set to **Best**. Then click **OK** to close the Playback Advanced Properties.
- Back on the **Audio** tab, click on the **Sound Recording Advanced Properties** button. On the **Performance** tab, once again set the **Sample Rate Conversion Quality** to **Best**. Then click OK to close the Sound Recording Advanced Properties.



↻ Click to enlarge

- Back on the **Multimedia Properties** window, click on the **Apply** button (if not gray-ed out) and then the **OK** button.

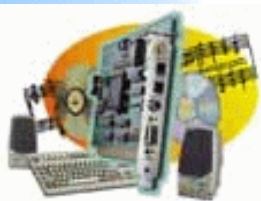


Windows ME and XP: The **Sounds and Multimedia Properties** windows are combined (XP calls it **Sound and Audio Devices**)

- On the **Audio** tab, click on the **Advanced** button for **(Sound) Playback**.
- On the resulting **Speaker** tab, select **Desktop Stereo Speakers**, even if this is a lap top. According to George SV2AGW, anything else will distort the TX sound.
- Then click on the **Performance** tab.
 - **Hardware Acceleration** should be set **at least one stop above None**, according to George, but try **Best** at first to see if your computer can handle it.
 - **Sample Rate Conversion Quality** must be set to **Best**. Then click **OK** to close the Playback Advanced Properties.
- Click **OK** to save the settings and leave the **Sounds** settings.

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Windows Volume Control Program Settings

The Volume Control program controls both the audio *volume* and *sources* of the sound card, both in and out. An incorrect setting can prevent audio from getting into or out of the sound card, so you need to get it right!

Sections of this page will help you configure:



[playback](#) (outgoing packet tones)

[recording](#) (incoming packet tones)

Some other things on this page:




[two sound cards](#)

[preserving your volume control settings](#)

[setting the "correct" RX volume](#)


[setting the "correct" TX volume](#)

If you followed the directions on the [sound settings page](#), you checked the box to ☒ [show the volume control on the task bar](#). You should see the volume control icon  on the task bar (actually the system tray) on the lower right of your screen.

A. Configuring Volume Control for Audio *Out* (Radio TX audio)

This sets the source and volume level of your **outgoing** packet tones. It's important that these tones not be too loud or too soft.



Left click twice very quickly on the **Volume Control icon**  (or go to the **Control Panel** and **Sounds: Audio**). The **Volume Control** window should open . It initially displays settings for just the **Playback** or **outgoing** audio (sound card-to-radio or computer speakers). Here's what the window looks like in my system; yours may be somewhat different:



[Click to enlarge](#)



The settings of importance on this window are:

- The left most **Volume Control** volume slider and the **Wave** volume slider (consider **Wave** to mean **Programs**) work together. The **Volume Control** slider is a master control that will further adjust the **Wave** volume. I've had good success with both sliders set 1/3 up from the bottom. Your setting will depend largely on how well the attenuation circuit in your TX audio cable matches the optimal microphone input of your radio. See [How Much TX Volume?](#) below for some further advice.

It's essential that neither of these two sliders be at the absolute bottom or near the bottom, and it's essential that the **Mute** boxes are **not checked**.

- Leave all **Balance** sliders in the middle. They are for stereo channel control and setting the slider to the wrong side could mute outgoing sounds.
- I mute both the Microphone and Line In as a preventive measure (so only AGWPE outputs sound, not the Microphone or Line In).

How Much TX Volume?

The best way to check your transmit volume would be with a deviation meter, something you may not have. But Jim K6CCC offered this alternate suggestion:

My standard advice for people who do not have access to some sort of deviation meter is to set your path to digipeat through a single local digipeater (e.g. TEST VIA WIDE), then go into converse mode (UI mode) and transmit a single carriage return. Watch to see if your single packet gets digipeated by that one local digipeater. If it doesn't get through at first, try several more times because it may not have gotten through because of a collision. If it doesn't get through after a few tests, turn up the volume until that point where it just gets through reliably.

Conversely, if the packet does get digipeated, turn down the transmit audio level a little and try again. Keep doing this (turning down the volume) until your packet DOES NOT get digipeated reliably. Then turn it back up JUST A LITTLE BIT and verify you can get the packet reliably digipeated.

It's FAR better to have your volume too low than too high!

(If you have access to a deviation meter, the packet should be right around 3 KHz of deviation.)

B. Configuring Volume Control for Audio *In* (Radio RX Audio)

This sets the source and volume level of your **incoming** packet tones. It is very important that these tones are not too loud or too soft.

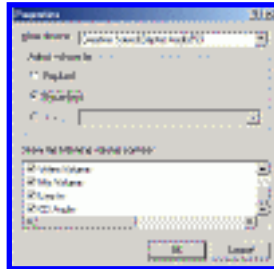
NOTE: These settings are found in a **different Volume Control sub-window**, the **Recording Control** window. **This is very important.** Many people do not realize this recording window exists. Failure to get the recording settings correct results in problems receiving packets.



From the **Volume Control** window shown above, select the **Options** menu choice, then **Properties**.



Click on the **Recording** radio button to bring up the list of volume controls. Make sure that there's a check mark ☒ next to the jack where you plugged in your **radio RX audio** cable -- either **Line In** (preferably) or **Microphone**. Here's what this window looks like on my system.



Click to enlarge



When you're done, click on the **OK** button.



You should now see the **Recording Control** window.



Click the **Select** box for the jack where you will plug in your **radio RX audio** cable, either the **Line In** (preferably) or **Microphone**.

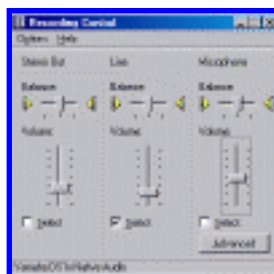


Set the volume slider about **1/3** up (soft). This should work for you, but note that AGWPE can probably handle any setting other than "off/quiet". See [How Much RX Volume?](#) below for some further advice.



Leave the balance slider in the middle.

Since I use the **Line In** jack for Radio RX audio in, here's what my settings look like. Notice the **Select** check mark ☒ under **Line In**:



Click to enlarge



After you've made your choices, click the 'X' in the top right corner of the window to close the window and the Volume Control program. Your settings will be saved automatically.



If you opt to use the Microphone instead of the Line In for RX in, be sure that you **do not use the Microphone Boost option** if it is offered by your system. I found this option on my laptop (running Win 98) by clicking on the **Advanced Properties** button found under the **Microphone** slider in the **Recording Control** window.



[Click to enlarge](#)

How Much RX Volume?

AGWPE is pretty tolerant of RX volume levels, but it is possible for the volume to be too loud or too soft.

To get it right, call up the AGWPE pop-up menu (click on the AGWPE tower icon) and select **SoundCard Tuning Aid**. In the Tuning window, select an **Oscilloscope Style** of **Sine Wave**. A good recording volume will produce a sine wave that fills 1/4 to 1/3 of this scope screen:




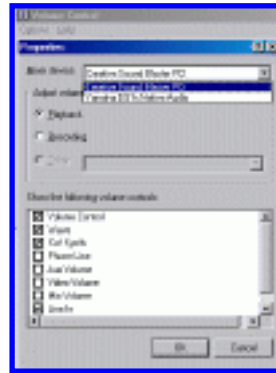
[Click to enlarge](#)

If you're interested in seeing the results of different volume settings, see the [Recording Control Experiment](#) page.

C. Configuring the Volume Control program for 2 Sound Cards

If you have two sound cards installed, you will need to set the playback and record settings for the second card (the one used by AGWPE). Here's how to do it:

- ✚ Left click twice very quickly on the **Volume Control icon**  in the System Tray. The **Volume Control** window should open.
- ✚ Select the **Options** menu choice, then **Properties** to bring up the **Properties Window**.
- ✚ At the top of the **Properties** window, you'll see a **Mixer Device** field. Click on the down arrow ▼ to the right of the field to call up a list of mixer devices.



☞ [Click to enlarge](#)

- ✚ Click on the second sound card to select it. Then after making sure the **Playback** button below it is selected, press the **OK** button. This will return you to the Volume Control playback sliders for the second card (the sound card's name will be in the lower left of the window). Make your settings as you did [above in A. Audio Out](#).
- ✚ When your done with the playback settings for the second card, select the **Options** menu choice again and then **Properties** to bring up the **Properties Window** again.
- ✚ Once again click on the down arrow ▼ to the right of the **Mixer Device** field to call up a list of mixer devices.
- ✚ Click on the second sound card again to select it. Then after making sure the **Recording** button below it is selected this time, press the **OK** button. This will bring you to the Volume Control recording sliders for the second sound card . Make your settings as you did [above in B. Audio In](#).

D. Preserving your volume control settings

Warning! For some sound cards/systems, it's possible that, when Windows reboots, your Volume Control settings may automatically be reset to a default and something other than you want. This happened to me. Even though I would chose **Line In** as my desired 'audio in' recording source, as soon as I rebooted, **Microphone** became the recording audio source! I'm not sure why this was happening -- perhaps it was the sound card mixer program.

Or your settings may be changed by another program that uses the sound card and you want an easy way to return them to the settings you use for AGWPE

You have two main options:

1. Each time you run AGWPE after a Windows boot/reboot, re-configure the Volume Control **Recording Control** properties (all the steps in 'B' above) and re-select **Line In**.
2. Use a utility program that, on startup, automatically sets the Volume Control settings the way you want them. I used a small (260 kb) freeware utility called **QuickMix** to do this. You can [download the program from the Quick Mix web site](#).

Using QuickMix

1. Install QuickMix by running the QuickMixIn.exe program that you downloaded.
2. Set the Windows Volume Controls the way you want.
3. Run the QuickMix program and 'save' the Volume Control settings to a AGWPE.QMX file in the directory of your choice.
4. Then you can run QuickMix (or just click on the .QMX file) to restore your AGWPE settings.

If you want to have this .QMX file automatically load at boot-up, put a shortcut to this .QMX file in your Windows startup folder. For me, that would be:

C:\WINDOWS\Start Menu\Programs\StartUp

In Windows Explorer, go to this directory and, from the Menu bar, select **File**, then **New**, then **Shortcut**, and then **Browse** to the AGWPE.QMX file you want. (Make sure you set the Browse directory window to show **All Files**, not Programs.)

5. Now whenever you start Windows, it will

automatically read the AGWPE.QMX file, load and run QuickMix, reset the Volume Controls, and then close QuickMix.

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Configuring WinPack to Work with AGWPE

WinPack, written by Roger Barker, G4IDE, is a great Windows-based packet terminal program. You can download it at <http://www.peaksys.co.uk> (or do a web search for other download sites). WinPack is shareware. The registration fee is £10 (about \$15 US) and well worth it if you decide to continuing using WinPack. (See the [Help](#) menu for [Registration](#) info.)

After WinPack is installed, review the [Help](#) file to learn how to use WinPack.

For specific help about WinPack and AGWPE, read the [Winpagw.txt](#) file located in the main WinPack directory. You'll also find more information in program [Help](#). (Select the [Help Contents](#) option from the [Help](#) menu and then, in the right index under [Fundamentals](#), click on the third item down, [Host Mode Support](#). On the resulting page, you should also look in the right index for additional topics about AGWPE and host modes in general.)

To configure WinPack to work with AGWPE:



Start AGWPE before starting WinPack.

On the WinPack menu, select [Options](#); then [Comms Setup](#).

In the resulting [Comms Setup](#) window, there is a field for [Host Mode](#) in the lower right corner. Click on the options arrow and select [AGW](#) (see picture below). When done, click on the [OK](#) button.



←Click to enlarge

If you will be using AGWPE as your only packet input source, then you don't need to worry about setting the normal TNC parameters such as baud rate, parity, etc. AGWPE handles all that! In fact the TNC parameters on this screen will 'gray out' (become inaccessible) since there is no need for them when you use AGWPE host mode.

AGWPE should be running before you start WinPack in AGW mode or try to toggle to AGW host mode. If you start AGWPE after WinPack, WinPack won't recognize AGWPE -- unless you toggle WinPack's host mode to NONE and then back to AGW. (Or you can close WinPack, start AGWPE, and restart WinPack.)

Disable Sounds in WinPack

It's possible that the speech and sound options in WinPack could create a conflict with AGWPE's use of the sound card, so you should disable all the sound/speech options in WinPack (unless you're using two sound cards in the PC).

Using WinPack with 2 AGWPE ports/2 radios

When you issue the connect command, put the AGWPE port number between the connect command "C" and the target station's callsign, for example:

C 2 KC2RLM

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Configuring UI-View with AGWPE

UI-View and UI-View 32 were also written by Roger Barker, G4IDE. Both are packet-based position plotting programs similar to other APRS software, but they also support TNC in KISS mode and BPQ host mode (besides AGWPE host mode). You can download both at <http://www.uiview.com>

UI-View is registration ware. The registration fee is £10 (about \$15 US) and well worth it if you decide to continuing using UI-View. Registration also gives you the right to upgrade to UI-View32, the 32-bit version which has some [additional features](#). See the [Help](#) menu in UI-View for [Registration](#) info.

Basic Setup

Here's how to configure UI-View to work with AGWPE -- it's really not hard. Roger's done a great job in explaining it all in the UI-View [Help](#).



With AGWPE running, start UI-View. On the top menu bar, select [Setup](#), then [Comms Setup](#). The resulting window should look like the graphic below. Set the [Host Mode](#) for **AGW**. (UI-View has context sensitive [Help](#), so press F1 to call up help for this window.)



[Click to enlarge](#)

With UI-View 32, you are done. Press **OK** and you should see a pop-up window with AGWPE ports info.

But for UI-View, press the [Setup](#) button next to AGW for one further selection.



On the resulting **AGWPE Setup** window, for **mode**, you can select either **DDE** or **TCP/IP**. Press F1 again to call up a very informative Help dialogue about AGWPE.



Click to enlarge

UI-View will work in DDE mode just fine with AGWPE. The only advantage of using TCP/IP mode is if you want to connect UI-View to AGWPE running on another PC accessible via a network or the internet.

For TCP/IP to work with UI-View, you must running AGWPE version 2000.15 or later and you must have the Windows [Winsock 2 update](#). Also make sure you have AGWPE's Winsock TCP/IP interface working: On the AGWPE menu, click once on **Setup Interfaces**. On the resulting **WinSock Interface** tab, make sure the **Enable Winsock TCP/IP Application Interface** box is check marked ☒. Click in the box to check/uncheck it.

After you have made your selection, press the **OK** button on both the **AGWPE Setup** and **Comms Setup** windows and UI-View should be working with AGWPE and receiving packets.

Disable Sounds

If you don't have two sound cards: It's possible that the speech and sound options in UI-View could create a conflict with AGWPE's use of the sound card, so you should disable all the sound/speech options in UI-View. With recent versions of UI-View, there's a **Sound Enabled** option on the **Options** menu that allows you to turn off all UI-View sounds in one go. If you're using a version without that option, then you should update to a newer version!

Running UI-View in AGWPE 2 port/2 radio mode

UI-View **receives** by default on all ports. To change that, go to the **Setup** menu and then **Comms Setup**. When you select a host mode of **AGWPE**, a **Setup** button will appear to the right of **AGWPE**. Press that button that to bring up the **AGWPE Setup** window. Then press the **Ports Mask** button to bring up the **AGWPE Port Mask Monitor** window. Check or uncheck ports to control which AGWPE ports UI-View will receive on.



Click to enlarge

To control which ports transmit, from the menu go to the **Setup: Stations Setup** window and the **Unproto port** field. For example to transmit only on the AGWPE port 1 radio (even if you have other ports/radios) enter **1**. To specify multiple ports, use a comma to list the ports, e.g. **1,2**. If you use multiple port transmitting, use the "beacon pause" so the radios don't transmit at the same time: from the **Setup** menu then select **Miscellaneous**.

UI-View32 vs. UI-View

Other than for the fact that it is a true 32 bit app, the main advantages of UI-View 32 over UI-View are:

1. The map refresh is faster than on the 16 bit version. On a K6-2/450, it will redraw at a rate of around 1,000 station icons a second.
2. It is an ActiveX server and provides a rich interface for external applications. Roger realized with his WinPack program that providing an open interface to encourage other software authors to write add-ons was a good idea in a ham radio application. UI-View32 takes the idea to a new level. If you have a look at these two sites, you can see some of the excellent add-ons that have been written for UI-View:

<http://welcome.to/uiview>

<http://www.qsl.net/g7jgq/uitool.htm>

The downside of UI-View32 compared to the 16 bit version is that:



you have to register it, and



it needs a more powerful PC; a P120 with 32Mb is probably the minimum.

An **unregistered** copy of UI-View also has these further limitations:



You cannot input an APRServe (APRS packets via internet) validation number. If you log on to APRServe, it will always send the default validation number of "-1". This doesn't stop you using APRServe, it just means that no IGATEs will gate your traffic from the internet to radio.



You cannot use UI-View as an IGATE.

If you upgrade to UI-View32: DON'T install UI-View32 on top of UI-View(16), or you'll finish up with a big mess. They are separate program and by default they install into separate directories. There is absolutely no problem with having them both installed on the same PC. You can put your registration in them both, and, if you use AGWPE, you can even run them both at the same time.

Of course, if you want to uninstall UI-View(16), you can, and it won't delete your maps, which you can move or copy into the UI-View32 program folder. (NOTE - make sure you uninstall, not manually delete.)

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Configuring WinAPRS to Work with AGWPE

Only WinAPRS versions 2.4.0 and above are able to use AGWPE.

New WinAPRS Users:

You can download the most recent version of the WinAPRS program (written by the Sproul Brothers, Mark, KB2ICI and Keith, W2UZ) at <http://aprs.rutgers.edu>

Installation and operating instructions are explained at the web site and come with the download. WinAPRS is shareware. You can run it without registering but with some limitations, most significantly the ability to save all your program settings (callsign, TNC, etc). Registration is \$60 and well worth it if you continue to use WinAPRS.

Experienced WinAPRS Users:

If you've been running WinAPRS (2.4.0 or higher) with a TNC and have WinAPRS set to automatically open the TNC port on startup, **don't start AGWPE before starting WinAPRS.**

WinAPRS will crash if it finds AGWPE using the COM port where WinAPRS expects to find a TNC attached! You can't correct this problem until AGWPE is shut down and WinAPRS is allowed to open normally.

When it does open, deselect any **Automatic Input** devices that are on the port which AGWPE will be using for PTT control:



Using the WinAPRS menus, click on **Settings**, then **WinAPRS**.



When the **WinAPRS Settings** window opens, under the far right **Automatic Input** section, uncheck any device that was using the port where you have now told AGWPE to find the PTT cable.

For example, if you had a VHF TNC on COM1 set for Automatic Input, but now have the AGWPE PTT cable on COM1, you need to **deselect** the **VHF TNC** (you can deselect a check-marked box by clicking on it). After it's deselected, click on the **OK** button to save the settings.

A. Configuring APRS for one AGWPE port / one Radio



Start AGWPE.




Start WinAPRS. First click on **Settings** in the menu bar, then on **Ports List**.




On the resulting **Ports Definition List** window, you should see a choice for **AGWPE on LOCAL**. Click once to highlight that choice, then click on the **Open** button. If WinAPRS finds AGWPE, the **Status** field will indicate **ACTIVE** and the **Comment** field will show the AGWPE version, for example, **AGWPE V2001.38**



[Click to enlarge](#)

It's most important that you see the AGWPE version notice in the **Comment** field. If you don't, then WinAPRS wasn't able to connect with AGWPE, even if the **Status** field says '**ACTIVE**'. This means that AGWPE isn't running or it isn't set right (for example, be sure the **WinSock Interface** option is checked  on the AGWPE menu).



If you have everything set right, then you should start to see packets at the bottom of the active WinAPRS window. If you don't see packets and your radio's "S" meter indicates it's receiving packets and the AGWPE modem icon's **green** pixel flashes , then something else is wrong and you'll need to go to [troubleshooting](#).



Note that, when using AGWPE, you can't change your packet PATH using the normal WinAPRS menus (Settings: TNC or Settings: Positions Report Rate). Instead you must edit the **AGWPE_Local.Prt** file in your **WinAPRS\Ports** directory. The second to last line of this file will have a line that looks like this:

PATH WIDE,WIDE

You can change the PATH value to any path you'd like. Note that the space after PATH is **not created by the <space> key** but by the **<TAB>** key. Also note that any PATH changes will not become effective until you save to your .prt file and then restart WinAPRS.

B. Configuring WinAPRS for two AGWPE ports / two Radios

WinAPRS is able to interface with two different AGWPE ports, and thus two different radios. For example, you could have one radio on the regular APRS frequency and another radio on the DX Packet Cluster frequency. (WinAPRS can then post both types of info, APRS packets and DX spots, to the WinAPRS maps!) Or you could have an HF radio to receive long distance APRS packets.

AGWPE has always been able to do this using TNCs, but now it can handle 2 ports/two radios using just the sound card; plus it can now handle 300 baud HF packet with the sound card.

Here's how to setup AGWPE and WinAPRS to use two sound card ports:



First, you'll need to built [cables suitable for two ports/two radios](#)



Next, [setup AGWPE for two ports/two radios](#)



Now you need to create an additional **.prt** file in the **Ports** sub-directory of your **WinAPRS** directory. The new file will be very similar in content to the existing **AGWPE_Local.prt** file that is already in the **Ports** folder.

Make a copy of the current **AGWPE_Local.prt** file using a different name. Edit the file as below using a simple text editor such as Windows' **Notepad**.

The new **.prt** file will be identical to the **AGWPE_Local.prt** file except for the following:



NAME line - the descriptive name you pick; your choice



AGWTNC line - AGWTNC # = **AGWPE port #** minus 1,

e.g. to use AGWPE Port 1, enter
AGWTNC 0.

Also, please note that the "space" between the FIELD name (1st column) and the FIELD data (everything after the FIELD name) is created by the **TAB** key, not the space bars. For example, the second line in the file below would be typed:

NAME<TAB>**DXClusters**<space>**on**<space>**145.03**".

Here's what the second **.prt** file might look like:

```
// Created by WinAPRS on 2/2/2
NAME DXClusters on 145.03 <-- a new name for each
port
TYPE TCP
PARSER AGWPE
HOST 127.0.0.1:8000
BAND VHF
PATH WIDE,WIDE <-- change UI path for this radio if
you like
AGWTNC 1 <-- port # minus one; this is AGWPE
port 2
```

Hint: You can also edit the NAME line of the original **AGWPE-Local.prt** file. You can change the name from "**AGWPE on Local**" to something like "**APRS on 144.39**" to help you better understand what each AGWPE port and radio is doing.



Save the new **.prt** file.



Re-start WinAPRS

Click on **Settings**

Click on **Ports List**. You should now see an additional AGWPE port.

Select and then **Open** the two (2) AGWPE ports one at a time:

>PORT #1 (AGWPE ON LOCAL)

>PORT #2 (DXClusters on 145.03)

WinAPRS should now be receiving packet data from both ports/radios/frequencies.

WinAPRS Hint: To better see DX cluster or HF packets, have WinAPRS display both a local map (state, region, US) and a world map :



First, from the **Maps** menu, open both maps

Then, click on the **Windows** menu option, then on **Tile**.

Warning: There is a bug in WinAPRS related to transmitting and AGWPE ports. As of version 2.4.7, WinAPRS will transmit APRS beacons on both AGWPE ports/radios. Listeners on the Packet Cluster frequency might not appreciate this. If you intend to run WinAPRS on a DX Cluster frequencies, you might want to disable transmitting to the Packet Cluster frequency by unplugging the PTT cable to the DX Cluster radio.

C.Troubleshooting Problems



WinAPRS: I open AGWPE first, but then when I start WinAPRS, it causes a system crash.

WinAPRS is probably configured to automatically open a TNC on startup. It crashes when it finds AGWPE using the COM port and not the TNC it expects to find! You can't correct this problem until you exit AGWPE and let WinAPRS open without AGWPE running. Then, in WinAPRS, deselect any **Automatic Input** devices that are on the port which AGWPE will be using for PTT control:

- Using the WinAPRS menus, click on **Settings**, then **WinAPRS**.
- When the **WinAPRS Settings** window opens, under the far right **Automatic Input** section, uncheck any device that was using the port where you have the AGWPE's PTT cable attached. For example, if you once had a TNC on COM1, but now have the AGWPE PTT cable on COM1, you need to **deselect** the **VHF TNC** (you can deselect a check-marked box by clicking on it).

- After it's deselected, click on the **OK** button to save the settings.
- Then close WinAPRS, start AGWPE, and restart WinAPRS.

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APRSplus and KipSSPE with AGWPE

APRSplus is another Windows-based program for receiving and plotting APRS position packets. It was written by Brent Hildebrand, KH2Z, and works in combination with Delorme's **Street Atlas** program (or **Map 'N Go**). APRSplus handles the APRS packet management and generates icons that are placed on the Street Atlas maps.

To make APRSplus work with AGWPE you also need Brent's free program, KipSSPE, which will link the two programs using their respective TCP/IP interfaces. **Note that KipSSPE only works with a registered version of APRSplus !** So, you'll need to send Brent \$60 US to get a registration code (info in APRSplus files) if you want to use APRSplus with AGWPE.

[Stephen Smith, WA8LMF](#), gets all the credit for working out all the instructions for running APRSplus with AGWPE below.

Quick Links for this page:

- * [Download and install APRSplus and KipSSPE](#)
- * [Configure KipSSPE](#)
- * [Configure APRSplus](#)
- * [Getting it All to Work](#)
- * [Settings for 2 Radios](#)
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- * [Troubleshooting APRSplus-specific problems](#)

Setting Up APRSplus and KIPSSPE to work with AGWPE

No changes are needed in your [cables](#), [windows setup](#), and [AGWPE program settings](#). They are the same as for other applications.

1. Install and configure [Delorme Street Atlas](#) and verify that it works normally.

2. Download and install APRSplus and KipSSPE:



APRSplus files can be found at the TAPR site:
<ftp://www.tapr.org/aprssig/winstuff/aprsplus/>

The main APRSplus installation file usually has a name like APRSPLUS2xx.zip.

[APRSplus documentation](#)



From the same TAPR directory also [download KipSSPE](#) (don't confuse it with the similarly named KipSS.zip.) KipSSPE is a middleware program that connects the TCP/IP interface of the AGW Packet Engine to the TCP/IP interface of APRSplus. In effect, KipSSPE makes APRSplus "think" it is receiving data from from a TNC instead of a TCP/IP source or LAN. (APRSplus can do this in addition to connections from a "real" hardware TNC and/or Internet connections. Part of APRSplus' confusing complexity is it's incredible versatility!)

Unzip **both** zip files into the same directory on your computer. After you do that, run the **Setup.exe** program in the directory to initialize and install APRSplus.

3. Configure KipSSPE



For future convenience, first create a Windows shortcut to **KipSSPE.exe** on your desktop.



Start AGWPE.



Now start KipSSPE. A dialogue window will open that looks similar to this:




☞ [Click to enlarge](#)



Don't worry about the values in most of the fields. Just make the following changes:




- At the bottom of the window, for the **IP Address** choose **127.0.0.1**.
- (If you have a network address, you could perhaps also use that. Just make sure the address you enter in this field is same the address you enter in APRSplus (below).)
- Insert your callsign into the **Callsign** box in the lower right corner.
- Check the box for **Auto-Start** to open the TCP/IP connection to AGWPE automatically whenever KipSSPE starts.
- Now click on the **Open TCP/IP** button below the **IP Address** box.
- Then, at the top of the window, click on the **Open** button to the **left** of **Settings>**.

After you press the buttons, they should say **Close TCP/IP** and **PE Close**, respectively, as in the picture above.

Is it working? At this point, you should be able to see packet data appearing in KipSSPE's **Received Data** window whenever you hear packets bursts from the radio's speaker or see the radio's BUSY indicator/"S" meter light up or see the little green pixel in the AGWPE modem icon  in the System Tray.

Likewise, you can test transmitting by pressing one of the **Transmit** buttons and checking to see if your radio transmits. The info in the **Demo>** field should be duplicated in the **Transmitted Data** field and your radio should transmit.

KipSSPE Program Notes: As you'll learn, the labels on the KipSSPE button tops **do not indicate current status**, but instead show what the setting will change to when clicked, so **PE Close** on the button **means** it is currently in the **PE Open** state and clicking on the button will close it.

Also note that some of the Windows controls for KipSSPE program do not follow convention. For example, clicking the  button in the upper right corner of the window **does not** shut down the program. It only minimizes it into the system tray where the KipSSPE icon ("KISS" in Morse code)  will appear. This is how you will probably want to run the program -- with the dialogue window closed and only the program icon showing in the system tray. To recall the KipSSPE dialogue window, just click on the system tray icon .

To truly shut down the program, use the **menu bar** and select **Exit**. When you exit, all your settings will be saved, although **if you did not**

check the "auto start" checkbox, the next time you start KipSSPE you will have to press both buttons.

4. Configure APRSplus

Remember: You must obtain a registration number for APRSplus from Brent, KH2Z, before you can run APRSplus with KipSSPE and AGWPE.

There are multitudes of setting screens and options in APRSplus, so I can't tell you how to configure APRSplus entirely on this page (see instead the unofficial [APRSplus documentation](#) web site). But here are the key settings for working with KipSSPE and AGWPE:.

A. From the **menu bar** at the top of the main APRSplus screen, click on **Setup** . Make sure that the following settings are entered:

B. On the **Main Parameters** tab, insert a **callsign**, your **registration number** (include the dashes between numbers), and your latitude and longitude.

C. On the **Program** tab, check mark the **version** of Street Atlas you are using. If you don't, APRSplus won't be able to start Street Atlas automatically.



On the **Internet** tab, the items in the bottom **Interlink** section should look like the following:



☞ [Click to enlarge](#)

(If your PC has an IP address assigned to it by networking software or a cable modem or DSL, it may have a different IP address to the right of the **Link-1** and **UDP-Open** buttons. If so, that's OK; leave them as they are.)



Check the ☒ **Open KiSS on startup** if you want APRSplus to automatically open a connection to KipSSPE when it starts. (Alternatively, you can leave it ☐ unchecked and start the connection manually in APRSplus by using the **Commands** menu option and selecting **KipSS Connect**.)



In the field to the right of the **KipSS-Open (Close)** button, enter **127.0.0.1:7301** (or the IP address you may have entered in the KipSSPE field for **IP Address**).



Leave "as is" the values to the right of the **Link-1,- 2,-3 and UDP-Open (Close)** buttons. They are not important for KipSSPE connections.



Save your setting by using the **File: Save** (or **Save As**) option in this window to save your **Setup.reg** file in APRSplus' **Data** folder.



Now click on the **KipSS** button until it says **KipSS-Close**. This will open the link to KipSSPE.

Program Notes: As with KipSSPE, the labels on the button tops are **not** "current status" indicators. Instead, the button shows what the setting **will change to** when the button is clicked; so when it says **KipSS-Close** on the button, it is currently in the **KipSS-Open** state and will close if you click on it.

5. Getting it All to Work

To make it all work, first start the AGW Packet Engine, then KipSSPE, and then APRSplus. After the three programs have started, you should see 4 icons in the **system tray** at the bottom of your screen:



The icon with two towers and the icon of a TNC are created by AGW. The icon showing a stack of dits and dahs (Morse code for KISS) is created by KipSSPE. The inverted triangle is created by APRSplus.

Now, in APRSplus, choose **Commands** and then select **Start Street Atlas** to start Street Atlas. (You can also right click on the APRSplus system tray icon to call up the **Commands** menu.)

If you did not select the "auto start KipSS" function, use the **Commands** menu (Alt+C) to select **KipSS Connect**.

If your radio is on, the cables are attached, and the Volume Control settings are correct, you should start to see station icons in the APRSplus **Positions** window and then eventually in Street Atlas (depends on what timing interval you chose for writing the APRSplus overlay file to Street Atlas; see the **Maps** tab and the second field to the right of the **1- All Reports** field).

6. Settings for 2 Radios

Use the **Commands: Unproto Paths** menu option (or Ctrl + Shift + U) to call up a list of UI paths. By default the TCP port for all path choices is set to 1, i.e. AGWPE port 1/radio 1. To use AGWPE port 2/radio 2, pick an unused line and change the TCP port to 2; you can also edit the path to one of your choice.

Now press the **Set** button to the right of the path and port you want to use. That line will then be highlighted in yellow to indicate it is the active path/port. Press the **OK** button.



Click to enlarge

7. Automate the Entire Startup Process via AGWPE

Want to get the AGWPE program to automatically start KipSSPE and then APRSplus when AGWPE finishes loading? Here's how:

Locate the file **AGWPE.INI** in the AGWPE program directory.

Open the file in the Windows **Notepad** or any other ASCII editor and add the following paragraph to the bottom of the file:


```
[RUNPRG]
RUN0=C:\APRSplus\KipssPE.EXE
CMD0=0
RUN1=C:\APRSplus\APRSPLUS.EXE
CMD1=0
```

Note: Be sure to edit the file paths in the paragraph to match the drive and directory where **you** have installed the KipSSPE and APRSplus programs.

Then save the file and close the editor. This automated process will begin the next time you start AGWPE.

8. Troubleshooting APRSplus specific problems:



To see if AGWPE and KipSSPE are working together, start AGWPE and then KipSSPE (without starting APRSplus). Assuming that **AGWPE** is working correctly and receiving packets, you should see packet data appearing in KipSSPE's **Received Data** window whenever you hear packets bursts from the radio's speaker or see the radio's BUSY indicator or "S" meter light up or see the little green pixel light up in the AGWPE icon  in the System Tray.



To see if APRSplus and KipSSPE are working together, transmit your status or position from APRSplus. Use the APRSplus **Send** menu option or **Ctrl-P** or **Ctrl-S**. Your position or status packet should then appear in the **Transmitted Data** field in **KipSSPE**. (If they don't, go to the "transmit" troubleshooting hint below.)



To see if APRSplus and Street Atlas are working together, temporarily use either an internet connection or TNC instead of AGWPE to receive packets and display them in Street Atlas. (If you can't do that, at the very least your own icon and position should display in Street Atlas.)



Note that Windows **Systems Resources** are an issue for Win95/98/ME users running APRSplus. If your system resources get too low (below 25%?), you may encounter unexpected errors in APRSplus and your **Setup** values may become corrupted. You can check your current **System Resource** level by going to the Window's **Control Panel** and selecting **System** and then the **Performance** tab.



Problem: I can't Transmit from APRSplus. I tell APRSplus to send a packet and I can see that the packet made it to the "Transmitted Data" field in KipSSPE, but the radio doesn't key up even though KipSSPE is sending and receiving data from AGWPE and AGWPE will successfully transmit data from other programs.

Solution: The port settings for the Unproto Paths in APRSplus is wrong. It may be set to **0** or it may be set to an AGWPE port that is attached to a different radio. Pick a different UI path or change the path's port number:

In APRSplus, use the **Commands: Unproto Paths** menu option (or Ctrl+Shift+U) to call up a list of UI paths. Press the **Set** button to the right of a suitable path which uses the AGWPE port and radio that you want to use; or edit an existing entry to create a path of your choice and the AGWPE port of your choice and then press the **Set** button.

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Configuring AGW's Suite of Companion Programs

George, SV2AGW, the AGWPE author, has written several packet control programs that will work with AGWPE. You can download them from <http://www.raag.org/sv2agw> or <http://www.elcom.gr/sv2agw/>

These programs are perfect for testing or troubleshooting AGWPE, since they are practically guaranteed to work with AGWPE. Other than entering your personal info (e.g. callsign, etc), you don't need to make any special setting to interface with AGWPE. They should work 'as is'.



AGW MONITOR - a program that simply displays **incoming** packets; it doesn't transmit. ([link to download it](#)). **Note:** Sometimes **AGW Monitor** freezes on startup. Use the Alt-Ctrl-Del key combo **once** to call up the Close Program window to close it. Then try to start it again. It usually starts on the second try.

Hint 1: Even though this program doesn't transmit it helps to enter your call sign. If you do, **any packets with your call sign will be displayed in red!** That includes packets from any of your stations with a different SSID, any digipeated packets, etc.

Hint 2: Increase the font size at the **Tool Bar** or **Fonts** menu.



AGW TERMINAL - is a terminal program you can use to receive and send packets. It lets you "connect" to other stations, including a bulletin board (BBS). This is a good program for troubleshooting and testing AGWPE problems since it both receives and transmits ([link to download it](#)).

Note: There is a version of AGWTerm which needs the TCP/IP Interface to AGWPE. This program is called **AGWTermTCP**.



AGW CLUSTERS - a program that collects and organizes incoming DX spots from a DX Packet Cluster frequency. ([link to download it](#))

Problems:

AGWTerm Closes Unexpectedly



I had just made a connection with another station when AGWTerm suddenly closed and I got this error message: *AGWTERM caused an invalid page fault in module WINMM.DLL*

You probably have a Windows sound scheme in effect. When you connected to the other station, Windows played the **DING.WAV** file. To prevent this from happening, set the Windows' **Sound scheme** to **No Sounds**. See the [Window Sound Settings page](#) on this site for further advice.



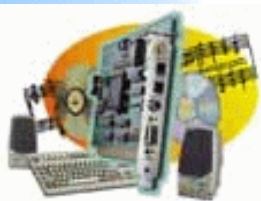
I am trying to run AGWTerm and I keep getting a "GDI File Read Failure". It also happens when I try to run AGWBBS and AGWFWD.

All of these programs need a corresponding *.SYS file in the directory. For example, to run AGWTerm.exe, you must have the AGWTRM.sys file (not AGWTerm.sys) in the same directory. For AGWBBS and AGWFWD you need the agwbbs.sys file. The *.sys file is included with the main program file in the program's *.zip file. If necessary, you can re-download the zip file at <http://www.elcom.gr/sv2agw/inst.htm> .



I've got AGWPE running and I can view the received packets using agwmon and AGWTERM, but I can't get AGWTERM to connect to anything. It acts like it's going to connect but the radio never transmits a packet. However, it **does transmit a packet when I hit the "Ask QRA" button in the toolbar of AGWTERM.**

There was a problem in some versions of AGWPE, e.g. 2001.38. Upgrade to the latest version of AGWPE to fix the problem.



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AGWPE and Your Web Browser

George SV2AGW has started to develop a web browser interface for AGWPE which lets you see received packets from AGWPE in your internet browser, e.g. Internet Explorer, Opera, or Netscape.

It can be useful for debugging AGWPE settings, Windows settings, and your hardware setups before you start interfacing other programs, such as AGWTerminal or WinPack, with AGWPE.

Here's how you do it:



First, make sure that you have an **http** folder (with files) in your main AGWPE folder. This should have been created when you installed AGWPE.



AGWPE 2001.38



http



Second, start AGWPE; then call up the AGWPE menu and select **Setup Interfaces**. This brings up the **Winsock and HTTP Interface Setup** window.

- Make sure the **Enable Winsock TCP/IP Application Interface** is checked.
- Then click on the **HTTP Interface** tab (see picture below).
- Checkmark ☒ **Enable the HTTP Interface**.
- Note the port number. If you don't have any other software running in your computer acting as a web server, leave it at **8000**. If other web server apps ARE running, enter a different port number; port 80 is normally the default TCP port for web browsers.
- Optional: Under **Password**, either leave the **LOGIN** and **PASSWORD** name defaults or enter new words of your choice.
- Press the **OK** button to save the changes.



Click to enlarge



Call up the AGWPE pop-up window again and this time select **Launch IBrowser**; or with AGWPE running, launch your Internet browser and, into the browser's address bar, enter <http://127.0.0.1:8000> or <http://localhost:8000>.

Possible Problem: 127.0.0.1 is an IP address that refers to your own machine. But if you are on a network/connected to a router and your computer has been assigned a different IP address, you may need to enter that address, e.g. 192.168.0.xxx via the address window in your browser.



If everything is working correctly, you should now get a green textured "AGWPE web page" with login slots.



Click to enlarge

If you kept the defaults on the **HTTP Interface** page, just enter **LOGIN** in the left window and **PASSWORD** into the right one; otherwise enter the words you selected for **Passwords**.



Your browser will then display a **AGW Packet Engine Main Menu** page.



Click to enlarge

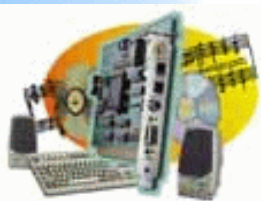
If you click on the **MONITOR** option, you should soon see incoming lines of packet data scrolling across your browser!

You can also call up a **MHEARD LIST** and even edit you AGWPE ports...

but **not all the menu choices are working** (as of version 2001.38).

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Troubleshooting: Trying to Identify the Problem


Unfortunately, there are several places where something can go wrong in setting up sound card packet. I find the easiest way to resolve problems is to start by trying to load AGWPE.


If AGWPE loads successfully, you will see the AGWPE tower icon



at the bottom right of your screen in the Windows **System Tray**.

You may or may not see the AGWPE modem icon  next to it, depending on whether or not you have a AGWPE port configuration problem. If **AGWPE won't load**, or you **don't see the modem icon**, or you receive **error messages** from either AGWPE or Windows, then you need to [solve a basic configuration problem](#).

If AGWPE loads and seems to be working correctly, you should see the AGWPE modem icon's **green** light flash  every time it receives and successfully decodes a packet from an active packet frequency. If you **don't see the green flash**, then you need to [solve a receive problem](#).

If the the **green** light blinks but you **don't receive the packet in your application** program (e.g. an APRS or packet terminal program) or you **didn't see AGWPE modem icon's red light blink**  when your application program tells AGWPE to transmit, then you need to [solve an application configuration problem](#).

If AGWPE's modem icon's **red** light does blink but the **radio does not transmit**, then you need to [solve a transmit problem](#).

If receive and transmit seem to be working correctly but you still have **trouble communicating with other stations**, then you may need to [solve a signal problem](#)

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Troubleshooting: Basic Configuration Problems

If AGWPE won't load, or you don't see the AGWPE modem icon , or you receive error messages from either AGWPE or Windows, this page may have an answer for you.

Minimum computer requirements:



Remember that AGWPE's sound card features will only work with Windows 95 and later (and perhaps Windows NT 4.0 -- unconfirmed). It won't work with DOS or Windows 3.1



Minimum computer processor requirements are discussed on the [More About AGWPE page](#).

If you encounter intermittent, unusual problems -- such as AGWPE stopping unexpectedly during a packet exchange -- it may mean your computer isn't keeping up with the fast TX and RX switching that takes place in a packet connection. You may have some success in correcting this problem if you stop running other programs, including those that run "silently" in background, such as anti-virus programs or other programs that load on startup and may not even put an icon on your task bar or system tray. See the box below "[What's running?](#)" for additional advice about identifying and closing other programs.

George has some other tricks you can try to to speed up your computer:



Win98 is "lighter" than Win95. This means that Win98 will run faster in your older computer. No need for extra memory. What is heavier and needs extra memory is Microsoft Office and many newer applications.



Turn off the Active desktop in Windows.


- **Make a permanent swap file after optimizing your disk with "Defrag".**
- **Check your autoexec.bat and config.sys file and remove TSR programs and device drivers if possible, such as CD-ROM support. Windows should be able to provide support for most devices, so DOS-loaded drivers aren't needed.**
- **Note that Installing a newer version of Internet Explorer doesn't affect your computer performance, however, newer versions may need more RAM. The primary problem is the loading time of Internet Explorer.**

Potential Bug: George says he hasn't been able to resolve problems with K6 processors, so you may not be able to run AGWPE with one.



You should also have the most up-to-date driver for your sound card, especially if your card is a few years old. In addition, George SV2AGW says that some sound cards, especially Yamaha and Aztec, **may be incompatible with AGWPE, but this may depend on your version of Windows, your sound card drivers, and the version of AGWPE.**

AGWPE Won't Load

You will know that AGWPE has successfully loaded when you see the AGWPE tower icon  at the bottom right of your screen in the Windows **System Tray.**



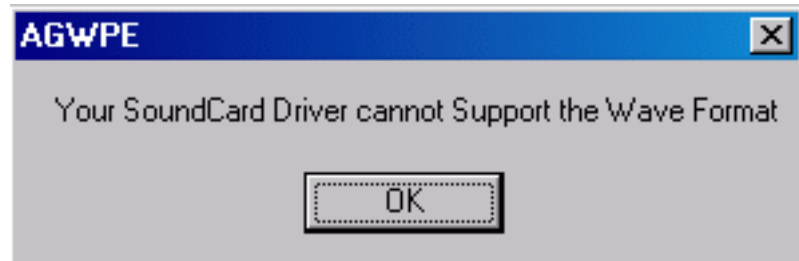
If AGWPE won't load and you don't get an error message, try re-booting and then restarting AGWPE to make sure it's not just a temporary Windows glitch.



If AGWPE won't load and you do get an error message, first try re-configuring AGWPE from the beginning: go to the AGWPE folder/directory and delete all files ending in **.ini; then restart and reconfigure AGWPE.**



The AGWPE banner comes up, but then I get the error message below and the program then closes. What's wrong?



AGWPE tried to open a sound device that is not a sound card. This problem was fixed in version 2002.10, so [download the most recent version of AGWPE](#).



When I try to start AGWPE, I get an error message that says "can not find WS2_32.dll"

Sounds like you're running Windows 95. You need the Winsock 2 Update from Microsoft. See the [Windows update page](#) on this site for the full solution.



When I start AGWPE I get a that says AGWTCPIP.SYS not found. Where do I find this file and which directory do I have to put it in?

You don't need the file. You get the message because you've enabled the [TCP/IP Over Radio feature](#) in AGWPE, which isn't needed for sound card packet. To disable this feature and stop the message, bring up the AGWPE menu and select [TCPIP Over Radio SetUp](#). At the top of the resulting window, select [Thanks NO TCPIP](#). (You can learn more about the [TCP/IP Over Radio feature at the AGWPE web site](#)).












I get an error message that says "Hook IRQ Failed".

This means the physical port (COMx, LPTx) that you want to use for PTT in AGWPE is already in use by another program or device, so AGWPE can't access it. You'll need to shut down the conflicting program or device to use this port in AGWPE. See [Port Conflicts](#) below.

[Note: George SV2AGW was planning to improve the program so that, if a COM or LPT port was invalid or in use, the sound card modem would still work and AGWPE would simply not try to access the faulty port for PTT control.]

No TNC Icon

-  The very first time you install AGWPE, the TNC icon  won't appear but that's normal. You need to configure at least one AGWPE port for the icon to appear. See [Creating an AGWPE Port](#) on the Basic AGWPE Program Setup page for information about configuring an AGWPE port.
-  **Possible Port Conflict:** If you have configured the AGWPE port and then closed and restarted AGWPE to allow the settings to take effect, but the **TNC icon**  still doesn't appear:
 -  Double check the properties for each AGWPE port to make sure they agree with the [Port Settings](#) information on the Basic AGWPE Program Setup page on this site.
 -  See [Port Conflicts below](#), about possible conflicts with other devices or programs using the AGWPE port .
-  **Possible Sound Card Conflict:** If another program or device is already using the sound card, AGWPE will normally tell you. AGWPE may still open and you'll see the AGWPE program icon  in the [System Tray](#), but the TNC icon  probably won't appear and AGWPE won't work.

First try to identify possible conflicts with **other devices** and the Sound Card. Go to the Window's [Start menu](#) and then [Settings: Control Panel: System](#). On the ["Device Manager tab"](#), select ["View devices by Type"](#). Then click on the plus sign [\[+\]](#) in front of [Sound](#) to reveal all sound devices. Then select [your Sound Card](#). Press the [Properties](#) button, then select the [Resources tab](#) to reveal information about the Interrupt and I/O range.

Confirm that there are "No conflicts" in the box below this information. If Windows says there is a conflict, you'll need to resolve it somehow (reassign or disable the conflicting device.)

Then try to identify possible conflicts with **other programs**, see ["What's Running?"](#) (below).

HINT: Any time you have trouble with AGWPE, it may be best to close AGWPE and delete any [port*.ini](#) and the [agwpe.ini](#) files in your AGWPE directory/folder. Then restart and re-configure AGWPE from the very beginning. It doesn't take long.

Strange AGWPE Behaviors



I'm running Windows 95 and when I start AGWPE, the AGWPE tower icon appears in the Task Bar *not* the System Tray. If I right click on the icon, I get the usual AGWPE menu, but "Setup Interfaces" does nothing; the popup menu just closes. I can't seem to make AGWPE do anything.

or



I fill in the new port information, close the program and restart it, but the port shows "IDLE" and I can't open the **Properties** window for that port by clicking on **OK**.

You need to update the Windows "common controls" file, COMCTL32.DLL file. See the [Windows update page](#) on this site for the full solution.



AGWPE closed and the Packet Engine icon 

disappeared, but the TNC icon  remained on the System Tray!

a. This may happen if AGWPE is closed down after a problem interfacing with a packet application program. You'll be able to re-open and run AGWPE despite the extra icon, but two **TNC icon**   will be present. I know of no way to delete the original **TNC icon** other than to reboot.

b. If AGWPE fails to start (you may get a "**Fatal Exception Error**" message) but leaves the TNC icon, go to the AGWPE folder/directory and delete all files ending in **.ini**; then restart and reconfigure AGWPE.



I can run AGWPE and my packet program on my laptop for about 30 minutes and then it just crashes. How do I stop this?

Turn off the laptop's energy saving mode.

What's Running?

Want to know what programs are currently running on your computer? Here's three steps that taken in combination may give you the answer.



a. Review the program icons on the bottom row of your screen (Task Bar and System Tray). Positioning the cursor over the icon will reveal the program's name.



b. You probably have programs running that don't have an icon on the Task Bar/System Tray. Enter the **Ctrl-Alt-Del** key combination **once**. This will bring up the **Close Program** window which lists most programs currently running, even those not on the Task Bar or System Tray. Unfortunately, some of the names may be cryptic, although you might be able to make an educated guess.

If you're brave, you can try closing some of the programs (or see the technique in **c.** for a better way to identify them). Be aware that you might close an important program unintentionally with this method and/or cause an unexpected reboot. So first save data in any other programs you have been working with before you try to close any program in this manner.

To close a program, click on its name and then press the **End Task** button. When you're done closing programs, click on the **Cancel** button to leave the **Close Program** window without rebooting.



c. To help identify exactly what's running, especially those programs that "auto start" when Windows starts, run the **msconfig** program. From the **Start button**, select **Run**, then type in and enter **msconfig**. This will start the **Windows System Configuration Utility**. This utility will show you all the file that Windows loads on startup.

Click on the **Win.ini** and then the **Startup** tab. The lists there may help you figure out the cryptic names in the **Close Program** box (above).

You can also experiment by un-checking items on these tabs and then pressing the **Apply** button. Windows will ask you if it's OK to reboot. When you do, you'll start up in **Selective Startup mode**. You can then try to load AGWPE to see if you have correctly identified and stopped the loading of the program causing the conflict.

After you are done experimenting, you can leave **Selective Startup** mode by selecting **Normal Startup** (on the **General** tab), then the **Apply** button, and then rebooting

To stop a program from automatically starting on Windows startup:



Look in the [Windows\Start Menu\Programs\Start Up](#) folder for any programs that start from the Startup folder. Delete any icons in this folder for programs that you no longer want to load when Windows loads.



Start the offending program and see if there is an option on its menu for deselecting auto loading or "start when Windows starts".



Other programs may auto start because of an entry in the Windows [Registry](#) placed there during the program's installation. You may be able to fix this by first uninstalling the program and then re-installing it and saying "no" to auto load or auto starting.



Other programs may be even harder to stop from auto starting. You would need to edit either the Windows [Win.ini](#) file (text file editor) or Windows Registry (with the [RegEdit](#) program). But these are near-"brain surgery" actions and not for beginners, since you could really damage your Windows configuration.

Port Conflicts

It may be even harder to identify port conflicts, since AGWPE may start and run despite the conflict, i.e. no error message. Conflicts may arise either from a device, such as a printer, or from a program that uses the same port.

To see if some device is causing the problem, first go to the [Start menu](#) and then [Settings: Control Panel: System](#). On the "[Device Manager](#)" tab, select "[View devices by Connection](#)" and double click on "[Computer](#)". This should tell you which devices are using each IRQ. Look for a conflict with your chosen AGWPE PTT physical port (COMx, LPTx) and some other device.

If there is a device conflict, you'll need to either reset the port used by the conflicting device (could be hard) or tell AGWPE to use a different PTT port (might be easier). To change the port AGWPE uses, move the PTT cable to a different physical COM or LPT port. Then make the corresponding change in the [Port Properties](#) in AGWPE.

If only one device is assigned to each COMx and LPTx port "serial port IRQ", then there is no conflicting *device*, so there is probably a conflicting *program* which is using the port. See "[What's Running?](#)" (above) for additional advice in identifying such programs. Either:



reconfigure the conflicting program to use another port
just close the offending program before working with AGWPE
change the PTT port in AGWPE (see paragraph above).

Port Diagnosing Hint

Want to see if a port conflict is causing a problem for AGWPE?
Temporarily force AGWPE to a port where there CAN'T be a conflict
with another program. Here's how:

Reset the **Serial Port** in [AGWPE's properties window](#) to a **non-existent parallel port**, perhaps LPT 3 (scroll down past all the COM options to the LPT options). Only use this port temporarily, since AGWPE will no longer be able to transmit.

If AGWPE now receives packets and your other program now works, then you know you did indeed have a port conflict. Fix the conflict (see paragraphs above), and then change the AGWPE PTT port settings back to a real port, i.e. not the non-existent one.

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Troubleshooting: Receive Problems

If you can't get AGWPE to communicate with the radio, it's probably easiest to troubleshoot "Receiving" first. After that you can [fix transmitting](#).

This page may help you if you've started AGWPE successfully, but you can't see the **green** pixel blink on the AGWPE modem icon  indicating AGWPE has received and successfully decoded a packet.

If you think of packets as traveling down a pipeline from your radio to AGWPE, then your first checkpoint should be the flow in the middle of the pipeline. Knowing what's happening there may let you eliminate one side of the pipeline as a problem. In this case the sound card would be the middle -- so let's test the sound card.

A first test: Use the Windows Sound Recorder -- to see if packets are getting from the radio to the sound card:



To **see** if audio signals are reaching the sound card, set your radio to an active packet or voice frequency, and start the Windows **Sound Recorder** program: from the **Start** button, select **Programs**, then **Accessories**, then **Entertainment**, then **Sound Recorder**.



Optional: To help you **hear** what the sound card is doing, keep the LINE IN cable plugged into the sound card but disconnect your LINE OUT TX cable from the sound card and plug your computer speaker cable back in. If the speakers are amplified, make sure they are ON and that the volume isn't turned down too far. Using the speakers will help you **hear** when packets reach the sound card. But this step is optional -- the next step will give you visual confirmations.



Press the **Record** button on the Sound Recorder, the one at the bottom furthest to the right with a **red** circle on it. Watch the S bars on your radio (and listen to your radio speaker if you can). When the S bars indicate a signal is being received, the Sound Recorder should display green wave patterns in its "oscilloscope", as seen in the picture below.



If you **do see** the wave patterns, then the problem is probably a conflict or configuration setting in AGWPE -- the next stop up the pipeline:

- If you have 2 sound cards, make sure to [select the correct sound card in AGWPE](#)
- You may have a conflict with another program or device trying to access the sound card. Revisit the [Basic Configuration Troubleshooting page](#) and in particular the sections on [sound card conflicts](#) and the [What's Running? help box](#).
- You may also have a hum (from ground loops) or RF interference on the RX audio.
 - You can eliminate ground loops by using an isolation transformer ([see RX Cable page](#)) and by making sure the RX cable's shield is not grounded at both the radio and sound card -- pick only one end to ground.
 - Shielded RX cable should eliminate most RF interference (although having one end of the shield may create an opening for some RF; see the [ePanorama](#) site for a discussion of this and a possible solution). You can also try toroids placed on the RX line.



If you **don't see** the wave patterns, work back along the "pipeline" according to the steps below. Keep the Sound Recorder program open and ready to test (by recording) as you make changes.

- [1. Check the Volume control settings](#)
- [2. Check the Radio](#)
- [3. Check the RX audio cable](#)
- [4. Check the Sound Card](#)

1. Check the Volume Control Settings

The following is condensed from [Window Volume Control page](#):



Double click on the **Volume Control** icon  in the system tray at the bottom of your screen (near the time of day).



Select the **Options** menu choice, then **Properties**, then click on the **Recording** radio button. (Option if you happen to have more than one sound card: in the **Mixer Device** field, be sure to select the sound card AGWPE is using.) Click on **OK** to go to the **Recording Control** window.



Click the **Select** box for the jack (source) where you plugged in your **RX audio** cable, either **Line In** or **Microphone**. Also:

- Make sure the **volume slider** (vertical) for the selected source is not at the bottom (about 1/3 up is fine).
- Make sure the **balance slider** (horizontal) for the selected source is in the middle.



Use the Sound Recorder program (as above) to check for signals.



If there are still no signals, try selecting the other input source -- **Microphone** or **Line In**. (You may have the plug in the wrong jack sometimes it's hard to see behind those computers!) If this was the problem, be sure to switch to move the plug back to the correct jack and test again.



AGWPE is pretty tolerant of RX volume levels, but it is possible for the volume to be too loud or too soft (rare).

- Too soft: If the **Sound Recorder's** sine pattern is nearly flat, try increasing the volume until you see more peaks and valleys. If this doesn't help, try turning up the volume at the radio.
- Too loud: If the sine pattern has very thick and tall waves, try lowering the volume. If this doesn't help, try turning down the volume at the radio.

In more recent versions of AGWPE, you can also use AGWPE's **Sound Card Tuning Aid** to check the volume level: call up the AGWPE pop-up menu (click on the AGWPE tower icon) and select **SoundCard Tuning Aid**. In the Tuning window, select an **Oscilloscope Style** of **Sine Wave**. A good recording volume will produce a sine wave that fills 1/4 to 1/3 of this scope screen:



↻ [Click to enlarge](#)









If you're interested in seeing the results of different volume settings, see the [Recording Control Experiment](#) page.

2. Check the Radio

If you still don't get any sound signals, check that your radio is indeed sending out sounds.



Do the radios 'S' bars or the 'Busy" indicator light up periodically or can you hear packets through the radio's speaker or an external speaker? If not:

-  is the squelch set? Note that AGWPE wants to hear a completely open squelch, i.e. no squelch.
-  is tone squelch (CTCSS and DTSS) turned off?
-  if dual VFOs, is the correct VFO/band selected?
-  is the antenna connected? (Don't laugh. It's happened to me... many times... after I unplug it for a lightning storm.)
-  is the radio tuned to the right frequency?
-  even though this shouldn't affect receive problems, you might as well check that the radio is set for simplex and not duplex operation -- to prevent transmit problems
-  can you hear packets using a different radio with the same antenna? with a different antenna?
-  can you hear packets by using a different antenna? or by moving the antenna to another location?



Is the radio volume control set OK, i.e. not too low? (A problem only if your RX cable connects to the radio's external speaker or maybe your microphone jack, not a data jack). In any event, for testing, turned up the radio volume to the radio's speakers so you can hear and confirm packet receipt.



Is the external speaker jack known to work with speakers? If not, use an Ohm meter to test it (or the RX audio pin at the microphone jack if you are using that instead).

3. Check the Receive Audio Cable

Assuming the radio is outputting packets, next check the RX audio cable.



Is the correct cable plugged in securely to both the radio and sound card jacks?



Are you using a stereo jack at the sound card plug? You probably should. A mono plug might cause a problem.



Are you using two sound cards? Make sure you're plugged into the right one!



Test the RX cable:

- Use a multi-meter to test for continuity and then short circuits.
- Or keep the cable plugged into the radio but unplug it from the computer and instead plug it into an external speaker known to work OK. (If necessary, use clip leads or an in-line coupler if the speaker also has a plug instead of a jack.)
- Try another cable, perhaps a store-bought cable, to see if it can transfer signals to the sound card or external speaker.

Check your solder connections if you find a problem.

4. Check the Sound Card LINE IN Jack



Do you know that the sound card LINE IN jack works with other sound input devices? If not hook up another device and see if the Sound Recorder detects audio signals from it.

5. Trouble Shooting



When I am tuned to the APRS frequency, I receive all packets perfectly, and the tiny green pixel on the modem icon on the task tray lights up for each received packet. Everything is working fine there. Then when I switch frequency to the local packet network, the radio shows packets are being received, but the little green light ignores them all. The signals are S9, and when I listen to the audio it is the characteristic packet sound. So I am stumped as to why the driver detects APRS packets with no problem, but cannot detect BBS style packets.

It's not the style of packets; it's the volume. The BBS packets were too loud -- maybe the BBS's TNC was outputting high audio volumes. If you input very loud RX audio tones, it may be possible to overdrive the sound card. Use the Windows [Sound Recorder \(above\)](#) or the AGWPE Tuning Aid ([also above](#)) to check the shape of the waves. Tall waves that fill the oscilloscope screen are a sign that signal is too loud and you should turn down the RX volume, either at the receiver or in the [Volume Control Recording](#) window.



AGWPE isn't decoding packets; the green pixel in the AGWPE modem icon on the system tray doesn't flash. What's strange is that the AGWPE tuning aid (Sine Wave screen) and the Windows Sound Recorder both show signals with good deflection.



I'm interfacing two radios to AGWPE using the sound card. Normally everything is working fine -- packets from each radio are going to the correct AGWPE ports and correct application programs. But sometimes I'm getting packets from both radios into a channel and that's messing up my communications !

This can happen and we're not sure why. It could be a sound card problem or it could be an AGWPE problem. The work-around is to try to use the least amount of RX audio volume on your radio. Slowly lower it until AGWPE has trouble decoding packets -- watch the green blinking pixel in the modem icon -- and then raise it just slightly.

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Troubleshooting: Application Setups

If you're having trouble getting a particular application to work with AGWPE, first make sure AGWPE works with some other packet program. Two that are pretty much guaranteed to work with AGWPE are the **AGW Monitor Program** or the **AGW Terminal Program**. If they don't work with AGWPE, then you have a problem not related to the application. If they do work, then you know it's a problem with the TCP/IP Interface with Windows or an incorrect setting in your application setup.



I see the little green pixel flashing on the TNC icon  so it appears AGWPE is receiving packets, but the packets don't seem to be getting from AGWPE to my packet program -- my program isn't showing any packet activity.

- Some programs depend on AGWPE's TCP/IP interface, including WinAPRS, APRSplus, UI-View (depending on how it's configured) , UI-View32. WinPack, UI-View using the DDE interface, and the AGW companion programs, other than AGWTermTCP, use the DDE interface instead.

Information about settings up AGWPE's TCP/IP Interface correctly is on the [Basic AGWPE Setup page](#). Information about implementing TCP/IP protocol correctly is on the [Windows: Enabling the TCP/IP Protocol page](#).

- Double check all settings in you packet application program, especially as they relate to interfacing with AGWPE. Re-read the application's page on this site; look for a link to it on the menu to the left. Many of these pages also have program-specific troubleshooting hints near the bottom of the page.



My packet program is trying to send a packet to AGWPE, but I don't see the the red pixel blink in the AGWPE modem icon



- See the solution immediately above dealing with the TCP/IP interface and the application programs interface with AGWPE
- Or the application may be trying to send the packet to a port -- say port #2 -- for which AGWPE is not configured. See your application's set up page -- use the menu to the left -- and look for the section on two radios/ two AGWPE ports.



I seem to have the AGWPE program working fine. My problem is when I run certain packet programs, such as RXClust or AGWTerm, a box opens saying:

Object Windows Exception

Failure in common control DLL

OK to resume? YES / NO

Solution: Be sure you have the latest [COMCTL32.DLL](#) Windows file by [downloading and applying a patch](#) from Microsoft called [50comupd.exe](#). (If necessary, then try reinstalling the [RICHE32.dll](#) file from your Windows installation disks, says Bob March, VA7BM.)



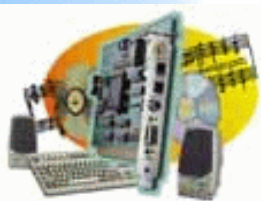
My packet program suddenly closed and I got this error message:

(The Application) caused an invalid page fault in module WINMM.DLL

You probably have a Windows sound scheme in effect and there was a conflict over use of the sound card. To prevent this from happening, set the Windows' [Sound scheme](#) to [No Sounds](#). See the [Window Sound Settings page](#) on this site for further advice.

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Troubleshooting: Transmit Problems

Ideally you've been able to *receive* packets in your packet applications. Receiving is a pretty good indication that all the programs are working together and that narrows the focus of our trouble shooting.

Check the simple things first:



Make sure the application program is sending a packet and that AGWPE is sending it to the Sound Card. You should see the **red** pixel in the AGWPE modem icon blink once  after it forwards the application packet to the sound card.

If you don't see the blink, go to the [Troubleshooting Application Setups](#) page for suggestions about AGWPE-application interface problems. Also make sure the application is sending the packet to the correct AGWPE port.



Are the TX Audio cables connected tightly to the proper jacks on the sound card?



Is the PTT cable tightly connect at the radio and at the correct PTT port on the computer?

Some common problems and solutions:



1. I tell the packet program to **CONNECT** or send a packet, but the radio doesn't indicate it is transmitting (no "on air" indicator or "S" bars).

- Make sure AGWPE is forwarding the packet to the sound card. you **wait a few seconds** for AGWPE to try to send the packet. AGWPE may be using "slotting" techniques to delay your packet transmission a few seconds, so the packet may not be sent out immediately.
- The radio's squelch must be fully open at all times. AGWPE needs to hear the frequency all the time!
- Make sure the packet program isn't in **COMMAND** mode (unless you are trying to **CONNECT** or **DISCONNECT**). If it is, you may not really be sending anything to be transmitted. Go to **CONVERSE** mode (K) or try a **CONNECT** command.
- Make sure the PTT cable is tightly connected at the radio and at the COM or LPT port that you have told AGWPE you want to use for PTT functions.
- It may be that the physical COM or LPT port where your PTT cable is connected isn't really the port you think it is: you think it's COM1, but your mouse or internal modem is on COM1, so your cable is really plugged into COM2 . Try [changing the PTT port designation in AGWPE](#).
- Check for a PTT pin assignment problem: When AGWPE is set for **Single Port** in **Port Properties** window, AGWPE sends the PTT signal **only to the RTS pin**. It does send it to the DTR pin, too. (Earlier versions of AGWPE did fire both pins.)

If AGWPE is set for **Dual Port** then the port 1 radio (left channel of sound card) will use **RTS** and port 2 (right channel of the sound card) will use **DTR**. See the [TX Cable page](#) on this site.

- You may have another problem with the wiring and/or circuit in your PTT cable. Double check wiring, components, and circuit routing. See the [TX Cable page](#) on this site.

- Rare: Occasionally there's a problem with the physical port. Can you test another device on it? Or try moving the PTT cable to another physical port (if one exists) and change the Port setting in AGWPE appropriately?
- Many new transceivers, e.g. Yaesu 8100, won't transmit if the TX audio level is too high. Use the [Windows Volume Control program](#) or the Volume Control icon to lower the Volume Control (and/or [Wave](#)) playback volume.



2. My radio gets stuck in transmit mode!

This can happen for different reasons, including closing AGWPE before first closing your Packet application. Possible solutions are:

- Close the packet application and AGWPE, if it's not already. Restart AGWPE, then the application. Symptoms should stop when AGWPE re-seizes the PTT port. Or try rebooting.
- You may have a short circuit in the PTT cable. Double check the wiring, components, and circuit routing. Make sure the PTT line isn't touching the shield or ground and that you have wired the PTT line to the correct pin on the transistor, MOSFET, or opto-coupler. See the [PTT Cable page](#) on this site.
- Hand Held Radios:
 - Remember that, in addition to the AGWPE PTT circuit components, you will still need any in-line PTT components recommended by the manufacturer. Many handhelds need **a capacitor on the TX audio line** between the radio and the cable's PTT gate circuit (in addition to a **resistor on the PTT line**).
 - If the manufacturer says to use a stereo plug for the radio's MIC jack, don't use a mono plug! It could create a short circuit.
- Windows ME (and ME only): You may find that on boot-up, Windows ME may send the a PTT line connected to a serial port (COM) in to constant transmit. You can learn more about a fix for this at [a Siliconpixels web page](#).



3. When I send a packet I can see on my radio that the PTT has been opened and the radio is transmitting, but I can't connect with another station. It's as if no one is hearing my packets.

Maybe they *aren't* hearing you.

First if you can -- get a second radio (such as a hand held) or a friend with a second radio. (See [Check Your TX Audio](#) below if you can't). Move both radios to an unused frequency and use the second radio to listen to the packets your first radio is transmitting. (And it's always wise to first check that the second radio is working OK and that it can hear other stations' packets, e.g. the radio isn't set for tone squelch.)

Confirm on the second radio that your first radio is transmitting 1.) a carrier and 2.) packet tones.

If you don't hear any thing on the second radio, even a carrier, check the first radio as outlined on the [Troubleshooting Receive Problems page](#).

If you hear a carrier but no outgoing packet tones:

- Make sure the TX Audio LINE OUT cable is plugged in tightly at both the radio and sound card. (This happened to me when I temporarily hooked up the computer speakers for a test and forgot to change back for AGWPE.)
- Re-check the [Windows Volume control settings for playback \(TX audio\)](#). Make sure the master "Volume Control" setting and the "Wave" setting are **not muted** in the **Playback** window. Also try moving the volume sliders up higher, even all the way to the top. (Remember that if you have more than one sound card, you need to pick the correct [Mixer Device](#) (sound card) before adjusting the Playback settings, i.e. adjust the sound card AGWPE is using!)

- Re-check the wire soldering in the TX cable for short or open circuits. See the [TX Cable](#) page on this site.

If you hear tones but they are very faint even though you have the Volume Control playback volume set to its highest:

- You may need to change the resistors in the attenuation circuit in your [TX Audio cable](#). Either change the higher resistance (serial) resistor to a lower value or the lower resistance (parallel) to a higher value; or use a variable resistor (potentiometer) in combination with one resistor ([see TX Audio cable page for a schematic](#)).

If it appears your are sending out normal packets but you still can't communicate with another station, it's possible that there is some other problem along the outgoing and incoming signal path which is affecting communications. Visit the [Troubleshooting Signal Problems](#) page for advice.

Check Your TX Audio

Here are two ways to check that your TX audio is getting to the sound card.



1. Use the [Windows Sound Recorder](#) to at least verify that TX audio tones are reaching the sound card.

First temporarily turn off the radio or disconnect the RX audio cable from the radio so you don't get RX audio into the Sound Recorder program.

In the [Windows Volume Control playback settings](#), make sure that **Wave** input is **not muted**, but make sure all other inputs (**Line In**, **Microphone**, **CD**) **are muted** at least for this test. (If you have two sound cards, make sure you are adjusting the settings for the right **Mixer Device**, i.e. sound card!)


Back in the **Sound Recorder program**, press the **Record** button on the Sound Recorder, the one at the bottom furthest to the right with a **red circle** on it.

Then use AGWPE to send a packet. The Sound Recorder should display green wave patterns in its "oscilloscope", as seen in the picture below.



If you **do see** the wave patterns, then you at least know AGWPE is successful in sending TX audio to the sound card. What you don't know is if the audio is making it to the radio.

If you don't see the wave patterns, then:

- Make sure the application program is sending a packet and that AGWPE is sending it to the Sound Card. You should see the **red** pixel in the AGWPE modem icon blink once  after it forwards the application's packet to the sound card.

If you don't see the blink, go to the [Troubleshooting Application Setups](#) page for suggestions about AGWPE-application interface problems.

- Double check that you made the correct settings in the **Volume Control program** as described above. Note: If you are using two sound cards, make sure you set the **Mixer Device** setting in the **Volume Control program** to use the AGWPE sound card before adjusting any other settings.

When you're done with this test, remember to reset your Volume Control program settings and your RX cable or radio.



2. Temporarily unplug your LINE OUT and PTT cables from the computer. Plug the computer's speaker cable back into the LINE OUT jack of the sound card. Use AGWPE to send a packet and you'll be able to hear what your packet tones sound like on the speakers. If you can hear tones, then you know the TX audio is getting through both AGWPE and the Sound Card. Any problems are due to the cable or the radio.



4. My application indicates it's sending a packet, but the radio doesn't transmit for a few seconds. What's wrong?

Nothing. AGWPE's automatic timing features are in effect. AGWPE has been monitoring the frequency and is using "slotting" protocols to try to send your packet when the frequency is not likely to be busy. So, AGWPE is holding the packet for a few seconds before transmitting it.

If this really bothers you, you can override this feature or set the timing parameters yourself. Call up AGWPE's menu and select **Properties** and then select the AGWPE port you are using. Select the **Tnc Commands tab** and then select "**Let me Control Parameters**". But AGWPE usually does a pretty good job of timing on its own.



5. I can send and receive a few packets, but pretty soon transmitting stops, especially if I try to send packets too rapidly. This clears up if I close and restart AGWPE and the packet application, but it just happens again.

It's likely your computer isn't keeping up with the quick switching that is taking place between the sound card and AGWPE. The computer may have missed a "hand shaking" data segment from AGWPE, so it's waiting for a signal from AGWPE that will never come again. This may mean you need a faster processor (or perhaps a sound card driver upgrade) to run AGWPE, although you can try to cut the processor load by shutting down other programs and background tasks. ([George, SV2AGW, talks about this problem on his web site.](#))

Visit this site's [software troubleshooting page](#) to learn how to find out which programs are running on your computer. You may be surprised how many are running, some without any visible icon on the task bar or system tray!



6. I'm trying to transmit on 300 baud with AGWPE version 2001.38 running on Windows 95, but I can't!

There's a bug in 2001.38 that seems to be the problem.



7. Listening to my transmitted packets on my computer speakers, I hear other noises mixed in with my packet.

Your sound card is getting input from sources other than AGWPE, such as you CD player or another application:

- Go to the [Volume Control program](#) and mute other input sources for playback, e.g. CD or microphone.
- [Turn off any sound schemes for Windows.](#)
- Turn off any sound generated by you applications (varies by program; see the program's Help file for possible advice).



8. I am unable to get the parallel port PTT working under Windows 2000 (also NT and XP?).

It does actually work, but it needs administrator privileges to work. Plus there's a bug in the handling of the LPT name and address. You can't just use the printer port name, i.e. LPTx.

Check your BIOS to see the printer port address of the printer port you want to use, e.g. LPTN1=0x378; LPTN2=0x278; LPTN3=0x3BC. If your printer port address is 0x3bc, select LPT3: in AGWPE regardless of what Windows says the port name is.



9. I run AGWPE on Win 2000 and, as soon as AGWPE loads, it causes the RTS line to go to +12v and key the transmitter. It stays that way until AGWPE unloads. How can I stop this?

Kirk KC2ELO came up with this solution: "Run the RTS line and ground to a coil on a 12v relay. The relay did nothing. I checked the points on the relay with the multi-meter and noticed that the voltage was now -5v on the RTS line in RX mode with the RTS line under load from the coil. I checked the voltage when AGWPE went into TX mode and found that the voltage changed under load from the coil from -5v to +5v. I added a diode to block the -5v by placing it on the RTS line with the cathode pointed towards the relay. I then switched the 12v relay for a 5v relay and now have a working PTT circuit.

I would imagine someone could come up with a circuit using a transistor to activate the PTT line with a 250ohm resistor (coil resistance on relay) and a diode to block the -5v. This would probably be able to fit into a DB9 connector. I wasn't trying to come up with something small enough to fit inside a connector I just want something that works and that's what I have now. Another benefit to using a relay is it gives you an isolated PTT circuit.

To sum it up this is exactly how I have mine hooked up:

- Pin 7 on DB9 (RTS line) is connected to a 1N914 diode (cathode facing away from pin 7)
- The diode is then connected to one side of 5vdc reed relay (RS Cat#:275-232)
- Other side of reed relay is connected to pin 5(GND) on DB9.
- One relay contact is connected to radio ground.
- Other relay contact is connected to radio PTT line."



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Troubleshooting: Signal Problems

Despite all that you've done to get AGWPE and the sound card transmitting and receiving correctly, you could still have problems communicating with other stations because of signal problems, including poor signal paths, interference, and "slow" radios and computers.

Many of these problems are not related to AGWPE or sound card packet use. They'd be a problem even if you were using a TNC. This page will discuss some of the few things you can do to change your computer, your applications, AGWPE, or the sound card to improve signal problems. It will also give you some basic suggestions for other things you might investigate relating to radio and antenna changes, either at your station or the target station.

Poor Incoming Packets

Some reasons for poor incoming packets (from the other station):



The sending station sent the packet without sufficient TX delay and its radio didn't have sufficient time to power up and switch from receive to transmit. As a result, the beginning of the packet was lost.

Solution: Increase TX delay in the sending station's TNC or sound card.



The sending station's TNC was over-driving the radio (sending packet tones that were too loud) and the radio had to "clip" (reduce the deviation) the signal, resulting in poor packet tones.

Solution: Reduce the sending station's TNC drive level. (It won't help to reduce the volume at your end; the packet is already damaged.)

Note 1: For a really thorough discussion of setting the proper audio drive level, [visit John Ackerman N8UR's site](#).

Note2: It's not likely that the sending station is sending good packets that are just "too loud" for the sound card or AGWPE to decode. [My experiments](#) indicate AGWPE can decode even the loudest packets, so there doesn't seem to be much value in lowering the Volume Control's [recording](#) volume or the radio's volume setting (if the radio controls RX audio volume to the sound card).



If you are operating a hand held, your battery saver option may have had your receiver off for a split second at the beginning of an incoming packet.

Solution: Turn off your handheld's "battery saver" when running packet.



The other station's packets are too faint.

Solutions:

- Increase your Volume Control recording setting for LINE IN (or Microphone, if you are using that); or increase your radio's volume control if the radio controls RX audio volume to the sound card.
- Have the other station increase power.
- Have the other station try a different antenna or a different antenna location.
- Consider an antenna feed-line problem if there is any other evidence of weakened signals, e.g. low audio and static on your signal compared to the signal of someone else nearby and moving the antenna doesn't help.



Poor radio signal path: you are experiencing multi-path refraction/ reflection problems (signal waves arriving out of phase) or a Fresnel null (part of the signal wave is blocked) because of the antenna's poor position.

Solution: Try moving the antenna.

Poor Outgoing Packets

Some reasons for poor outgoing packets (from your station):



Your radio is not switching to transmit mode fast enough and AGWPE sent the beginning of the packet before the radio was ready; or the receiving station's radio isn't getting enough time to switch from transmit to receive.

Solution: Increase TX delay in AGWPE: from the AGWPE pop-up menu, select **Properties**, then select **Port 1**, and then press **OK**. On the resulting **Properties** window, click on the **TNC Commands** tab (behind the default **TNC Setup** tab. Select "**Let me control parameters**". **Increase** the value of the **RespTime** until the problem goes away.



Your sound card is over-driving the radio and the radio had to "clip" (reduce the deviation) the signal, resulting in poor packet tones.

Solutions:

- Reduce the sound cards playback volume by moving the **Wave** slider or **Master** slider down.
- You may need to increase attenuation in your **TX Audio cable** by changing the resistors. Either change the high resistance (serial) resistor to a higher value or change the lower resistance (parallel) resistor to a still lower value; or (better still) use a variable resistor (potentiometer) instead of the divider circuit. A variable resistor will let you adjust the attenuation and resulting volume a bit easier.



Your packet tones are too weak and aren't being decoded by the other station.

Solution:

- The opposite of the overdriving problem above: Increase playback volume or decrease attenuation in the TX Audio cable.
- Increase power out.
- Try a different antenna or a different antenna location.
- Consider an antenna feed-line problem if there's any other evidence of weakened signals, e.g. low audio and static on your signal compared to the signal of someone else nearby and moving the antenna doesn't help.

Other Problems and Solutions



If you are operating at 9600 baud on the air, note that you need to have a particularly good signal for everything to work correctly. Higher frequencies are more susceptible to signal problems.



Make sure neither station (you or your target) is using tone squelch inadvertently.



Question: I have AGWPE working OK and was downloading data from a BBS. After receiving a burst of data, usually AGWPE responds, for example, with "RR R3", "RR R4", "RR R5", all in ONE burst. But with this BBS, AGWPE frequently responds with a short break between "RR R3" and "RR R4". During the break, AGWPE releases the PTT and that results in the BBS sending more data. This new data causes a collision with AGWPE's transmission of "RR R4", and the whole packet exchange slows down dramatically. Why does AGWPE insert that break?

Solution: This problem usually results when the sender -- the BBS in this case -- isn't using the AX.25 ver. 2 protocol and has a PACLEN of less than 255 characters. This creates a timing problem in the acknowledgement of packets.

The fact that you are seeing multiple "RR"s indicates you are not letting AGWPE control the timing (AGWPE would only send one "RR") and are setting the timing parameters yourself.

To fix the problem, go to the timing parameters window -- from the AGWPE menu, select **Properties**, then select the **Port**, and then press **OK**. On the resulting **Properties** window, click on the **TNC Commands** tab behind the **TNC Setup** tab. (You should find "**Let me control parameters**" selected.) **Increase** the value of the **RespTime** until the problem goes away. Or select let the AGWPE "program adjust parameters".

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Last Updated: 03/05/2002



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Recording Control Experiment

I was curious to know which settings were best for the **LINE IN Recording Volume** in the Windows Volume Control program. I thought that you might need to get it perfect for AGWPE. Surprisingly, I found that -- at least for my radio and sound card -- it doesn't matter much to AGWPE -- it can decode just about anything!

I did **not** test the **MICROPHONE Recording Volume**, only LINE IN. Settings for the microphone might be more sensitive. Likewise, I did **not** test **Playback** settings.

Below are screen captures showing the volume slider and the resulting display on the oscilloscope in the Windows **Sound Recorder** program (**Start: Programs: Accessories: Entertainment: Sound Recorder**). I used a standard un-attenuated receive cable.

In almost every case except the 3rd -- which is OFF -- AGWPE decoded the packet successfully! If anything, it may have missed some very soft packets on the low setting. It didn't seem to mind the high setting.

1. Volume Setting: Very Low -- signal present



↪ [Click to Enlarge](#)

2. Volume Setting: Very Low -- no signal present but open squelch (white noise)

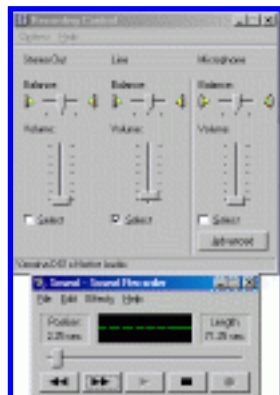


[Click to Enlarge](#)

The picture above shows the scope when the volume setting is low but "ON".

The picture below shows the scope when the volume setting is too low and "OFF".

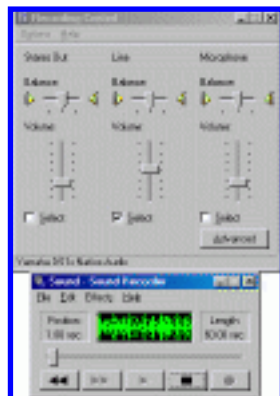
3. Volume Setting: Off (actually is was too low -- it wasn't at the bottom; watch out)



[Click to Enlarge](#)

é If you see a flat line while recording, the volume is OFF!!

4. Volume Setting: Middle



[Click to Enlarge](#)

5. Volume Setting: Highest



[Click to Enlarge](#)

Final Conclusions:



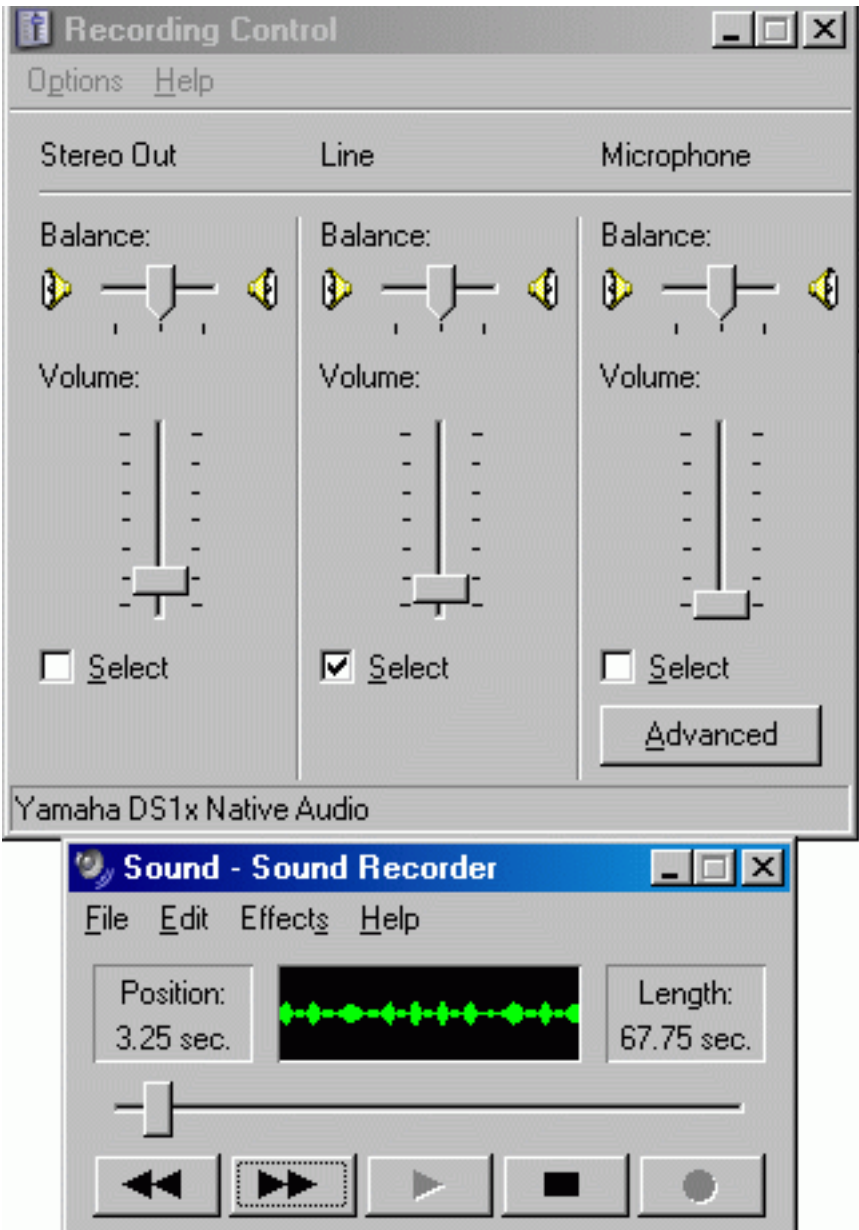
**Make sure the slider is not OFF by going too low!
AGWPE will accept a wide range of volume..**

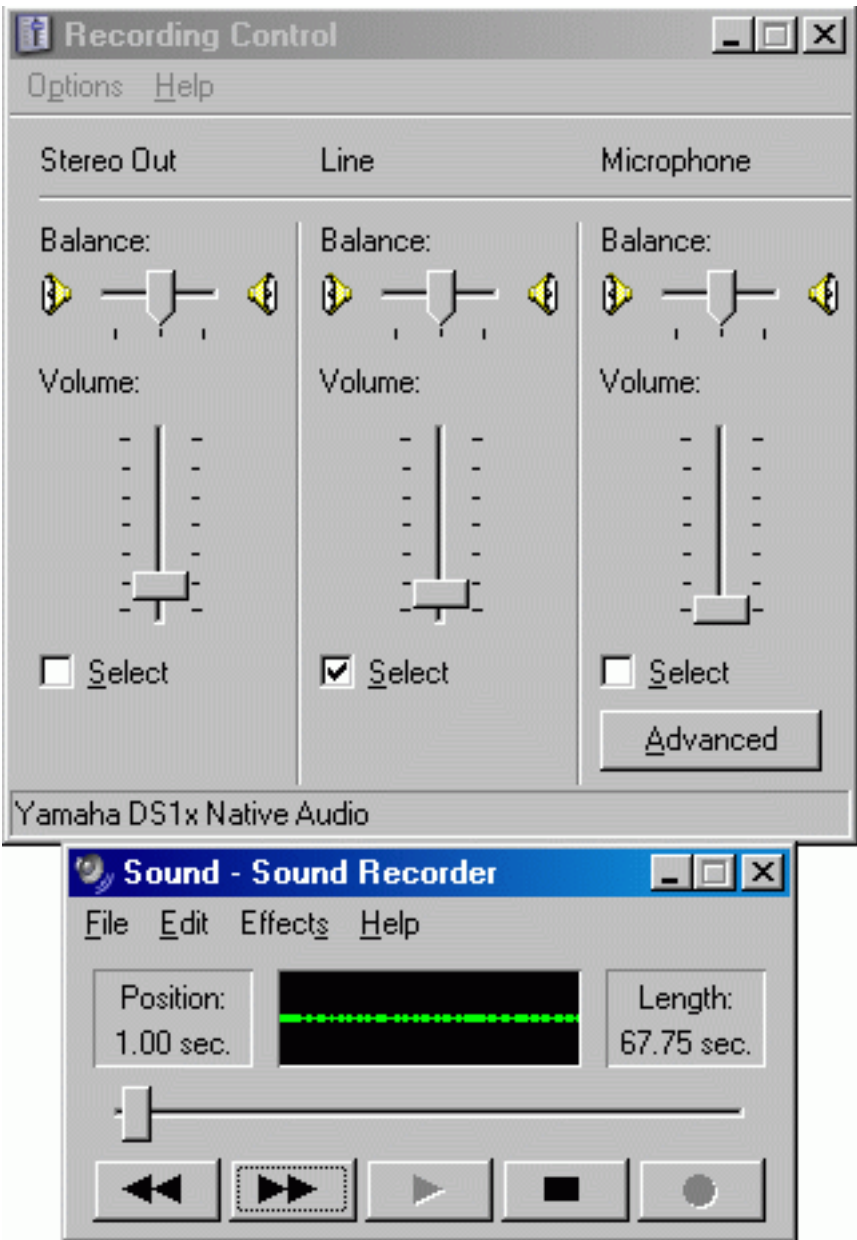
However, if you input very loud RX audio -- perhaps by turning up your receiver's volume control -- it may be possible to overdrive the sound card. Use the Windows [Sound Recorder](#) to check the shape of the waves. Very thick oscilloscope waves are a sign that signal is too loud and you need to turn down the RX volume either at the receiver or in the **Volume Control Recording** window.

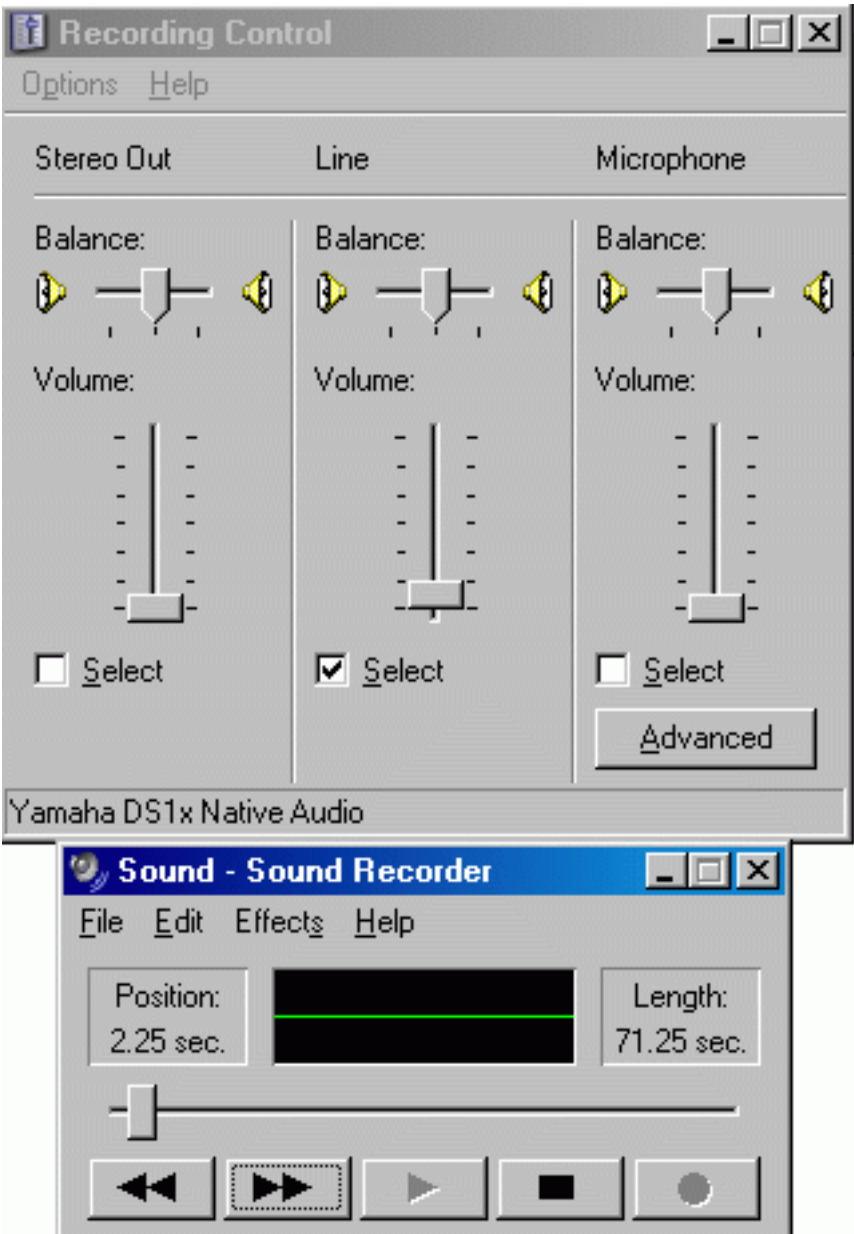
I'd be interested to hear from you if you try this experiment for your station.

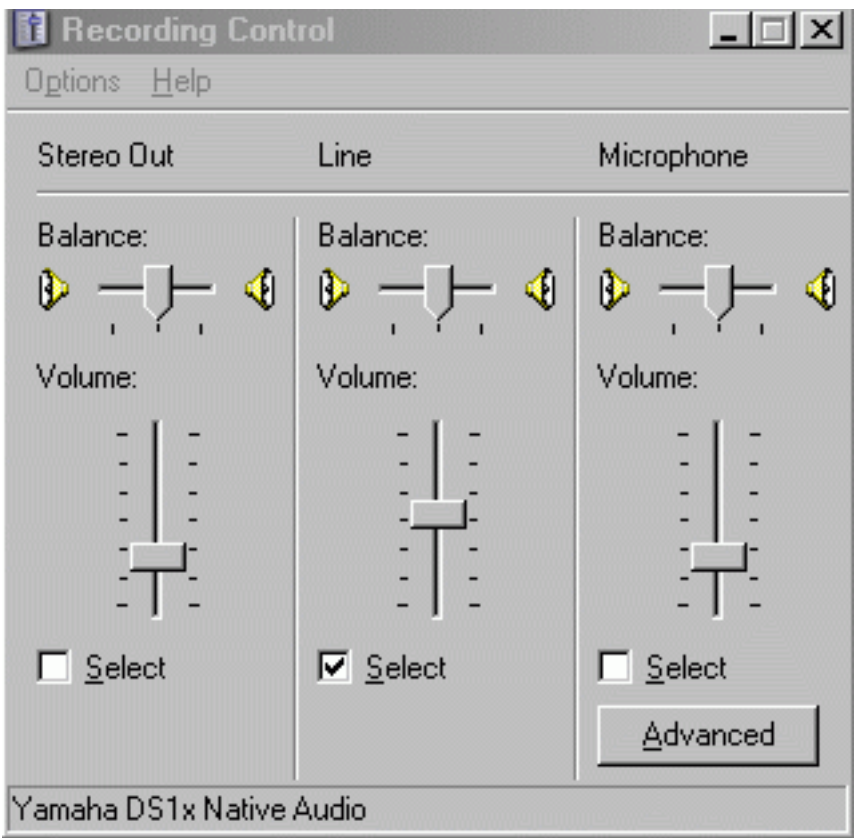
Last Updated: **03/05/2002**

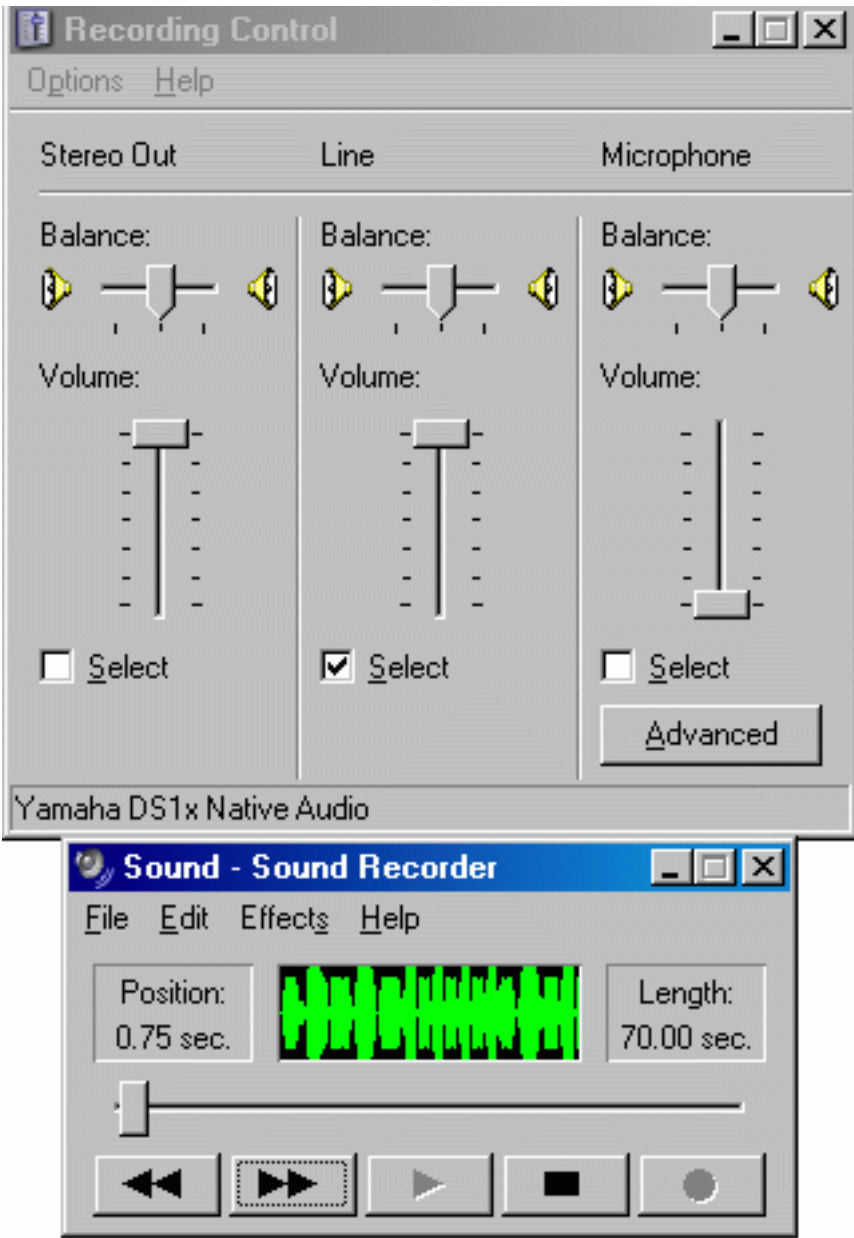
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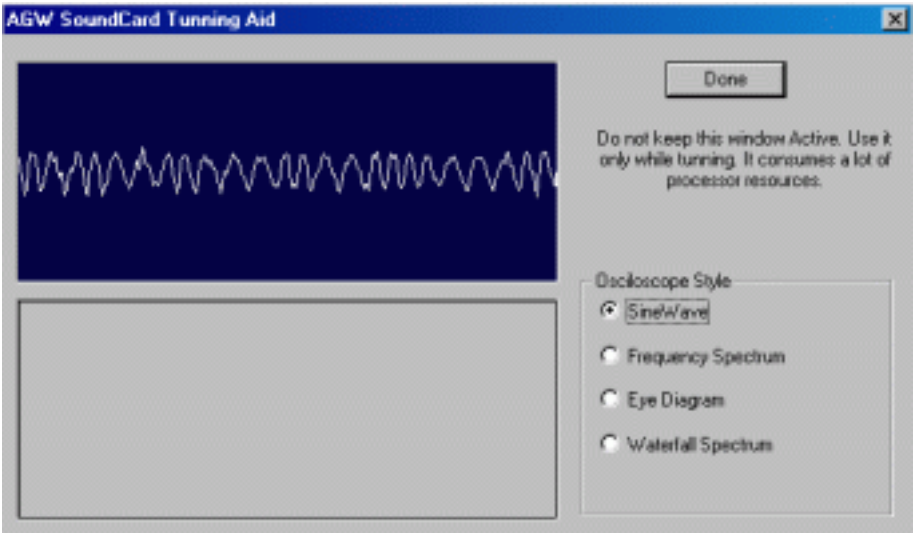


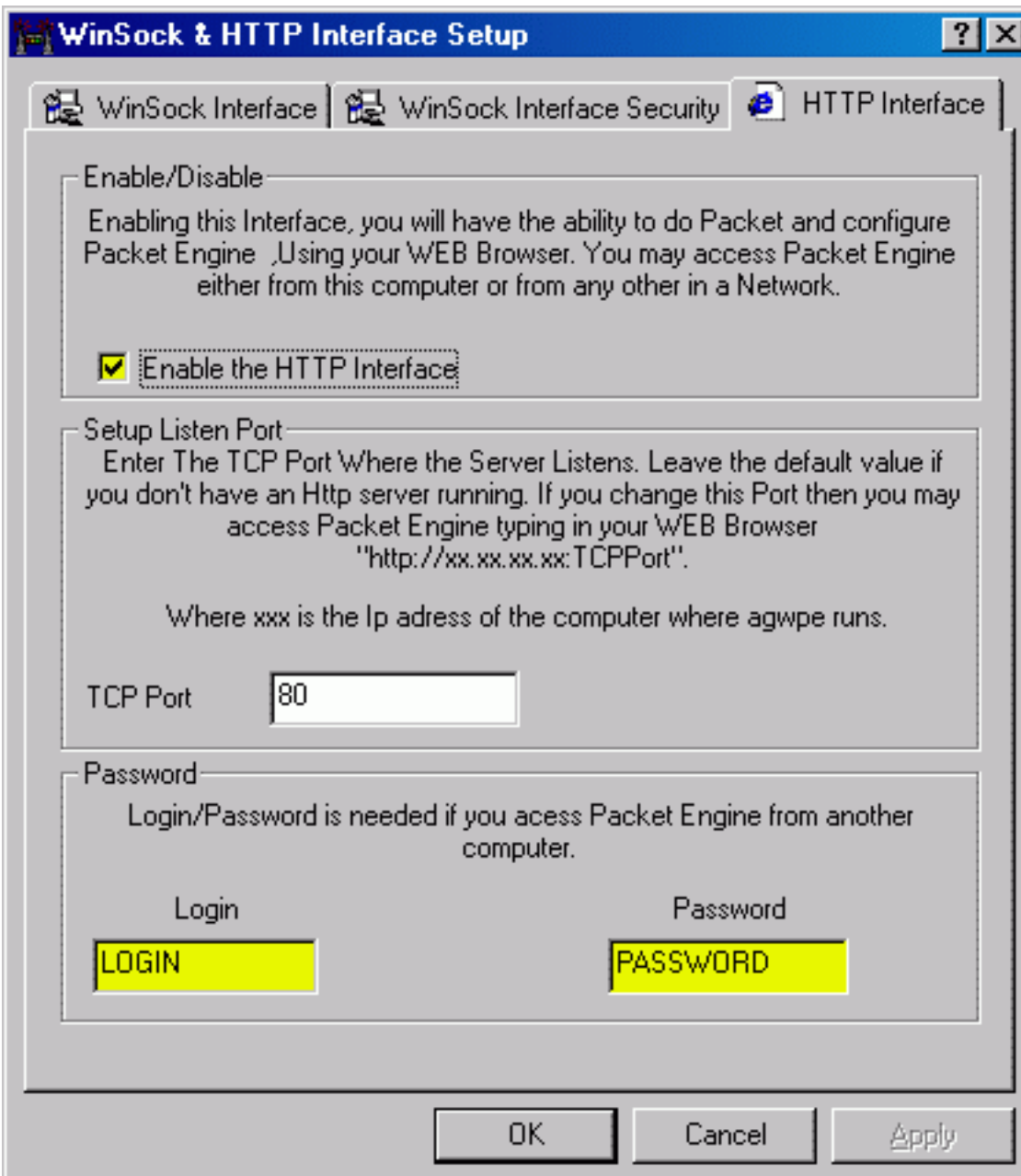












The image shows a Windows-style dialog box titled "WinSock & HTTP Interface Setup". It has three tabs: "WinSock Interface", "WinSock Interface Security", and "HTTP Interface". The "HTTP Interface" tab is selected. The dialog is divided into three sections: "Enable/Disable", "Setup Listen Port", and "Password".

Enable/Disable
Enabling this Interface, you will have the ability to do Packet and configure Packet Engine .Using your WEB Browser. You may access Packet Engine either from this computer or from any other in a Network.

☒ Enable the HTTP Interface

Setup Listen Port
Enter The TCP Port Where the Server Listens. Leave the default value if you don't have an Http server running. If you change this Port then you may access Packet Engine typing in your WEB Browser "http://xx.xx.xx.xx:TCPPort".
Where xxx is the Ip adress of the computer where agwpe runs.

TCP Port

Password
Login/Password is needed if you access Packet Engine from another computer.

Login	Password
<input type="text" value="LOGIN"/>	<input type="text" value="PASSWORD"/>

At the bottom of the dialog are three buttons: "OK", "Cancel", and "Apply".

AGW Packet Engine

Authorization

This is the new USER Interface. Because it is possible to initiate this operation from all over the world you need to enter your login name and your password. Otherwise you will not be able to alter any configuration. You will just view the properties.

(c) 1999 [ST1AGW](#)

AGW Packet Engine

Main Menu

AGWPE

<u>New RadioPort</u>	<u>Edit RadioPort</u>	<u>TCP/IP Over Radio</u>	<u>RadioPort Status</u>	<u>AX25 Status</u>	<u>General</u>
<u>Monitor</u>	<u>MHeard List</u>	<u>Connect(Terminal)</u>			

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KipSS/PE ✕

Exit ID Disconnect

PE Close Settings> 127.0.0.1:8000

Transmit Demo> TEST-1>APKISS,RELAY/1::ALL :This is a test for port 1 {1

Transmit Demo> TEST-2>APKISS,RELAY/2::ALL :This is a test for port 2 {2

Received Data

W6JPL-2>APRS/1:13403.08NN11815.40w#PHG5580/A=001100/JPLARC/Downtown LA

Transmitted Data

WA8LMF-15>APS199,WIDE2-2/1:>190312z[199YD]Kenwood TM-211, Comet SB14 and KAM at home

Digipeat Functions

☐ Do not Digipeat

☒ Digipeat My Alias

☐ Digi Local Wide

☐ Digi All

IP Address

127.0.0.1

Close TCP/IP

☒ Auto-Start

☐ Allow Monitor-only connections

Connections

WA8LMF-15

Callsign

wa8lmf

Alias

RELAY



APRS Plus

APRS+Street Atlas Setup

File Edit Commands Points

Main Parameters | Profile | Sounds | Lists | Internet | Program | Data

Proxy ☐ Manual

Server

IP Address

☐ Gate INC data stream to Internet

☐ Gate Messages from Internet to Local RF Stations

Heard within 2 digipeater Hops

Heard within the last 8 Hours

☐ Channel Filler ☐ Posits Only Path>

IGATE Path>

☐ Substitution

InterLink

Link-1	<input type="text" value="7301"/>	<input type="text" value="127.0.0.1"/>	<input type="button" value="UDP-Close"/>	<input type="text" value="7301"/>	<input type="text" value="127.0.0.1"/>
Link-2	<input type="text" value="7302"/>	<input type="text" value="127.0.0.1"/>	<input type="checkbox"/> Open KipSS on startup		
Link-3	<input type="text" value="7303"/>	<input type="text" value="127.0.0.1"/>	<input type="button" value="KipSS-Close"/>	<input type="text" value="127.0.0.1:7301"/>	<input type="button" value="▼"/>

Port 1 Closed Port 2 Closed

Digi Paths: C:\HAM PROGRAMS\APRSPLUS\Data\Paths... [X]

File

ID	Unproto Path	Port	
I	Internet TCP/IP	TCP	
1	JUNK, JUNK	1	A-Set
2	RELAY, WIDE	1	B-Set
3	RELAY, WIDE	1	C-Set
4	RELAY, WIDE	1	D-Set
N	RELAY, WIDE	1	E-Set
S	RELAY, WIDE	1	F-Set
E	RELAY, WIDE	1	G-Set
W	RELAY, WIDE	1	H-Set
ECHO	ECHO	1	I-Set
EG	ECHO, GATE	1	J-Set
WIDE	WIDE	1	K-Set
WW	WIDE3-3	2	L-Set

OK

Port Definitions List

Open

Close

Close all

Name	Type	Parser	Band	Status	Open #	Comment
Standard UHF TNC	SERIAL	APRS	UHF	--	--	
AGWPE Sound Card & COM11	TCP	AGWPE	UHF	ACTIVE	1	AGWPE V2001.38
www.aprs.net:10151	TCP	APRS	TCP	--	--	

Comms Setup

Baud Rate

☐ 1200 ☐ 2400 ☐ 4800
☒ 9600 ☐ 19200

Data Bits

☐ 7 ☒ 8

Stop Bits

☒ 1 ☐ 2

Parity

☒ None
☐ Odd
☐ Even

Com Port

☐ None
☒ Com1
☐ Com2
☐ Com3
☐ Com4

Handshaking

NONE

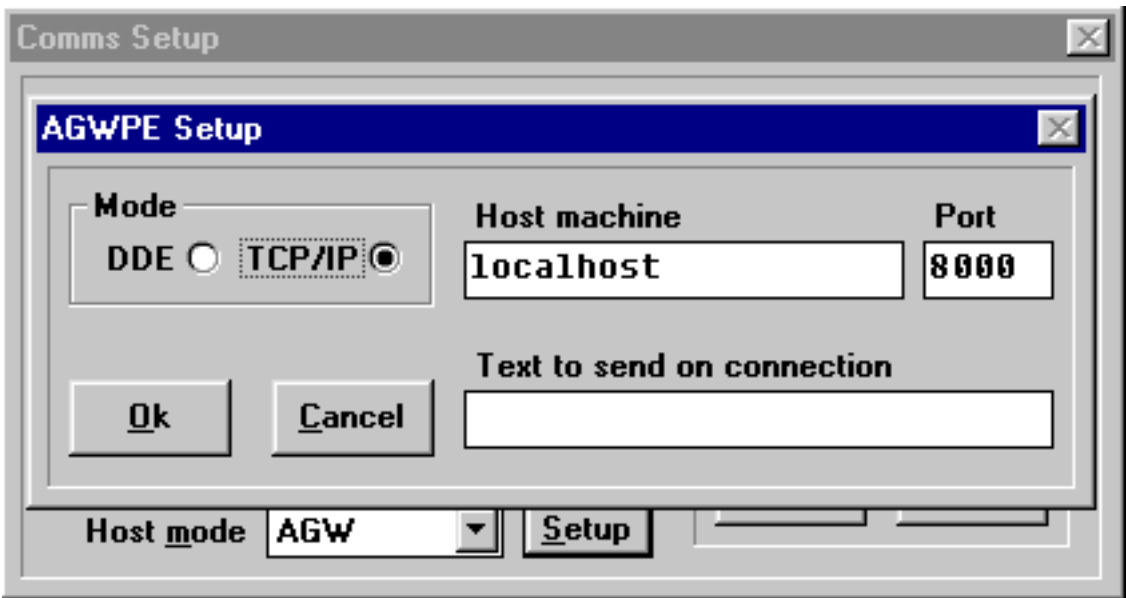
Host mode

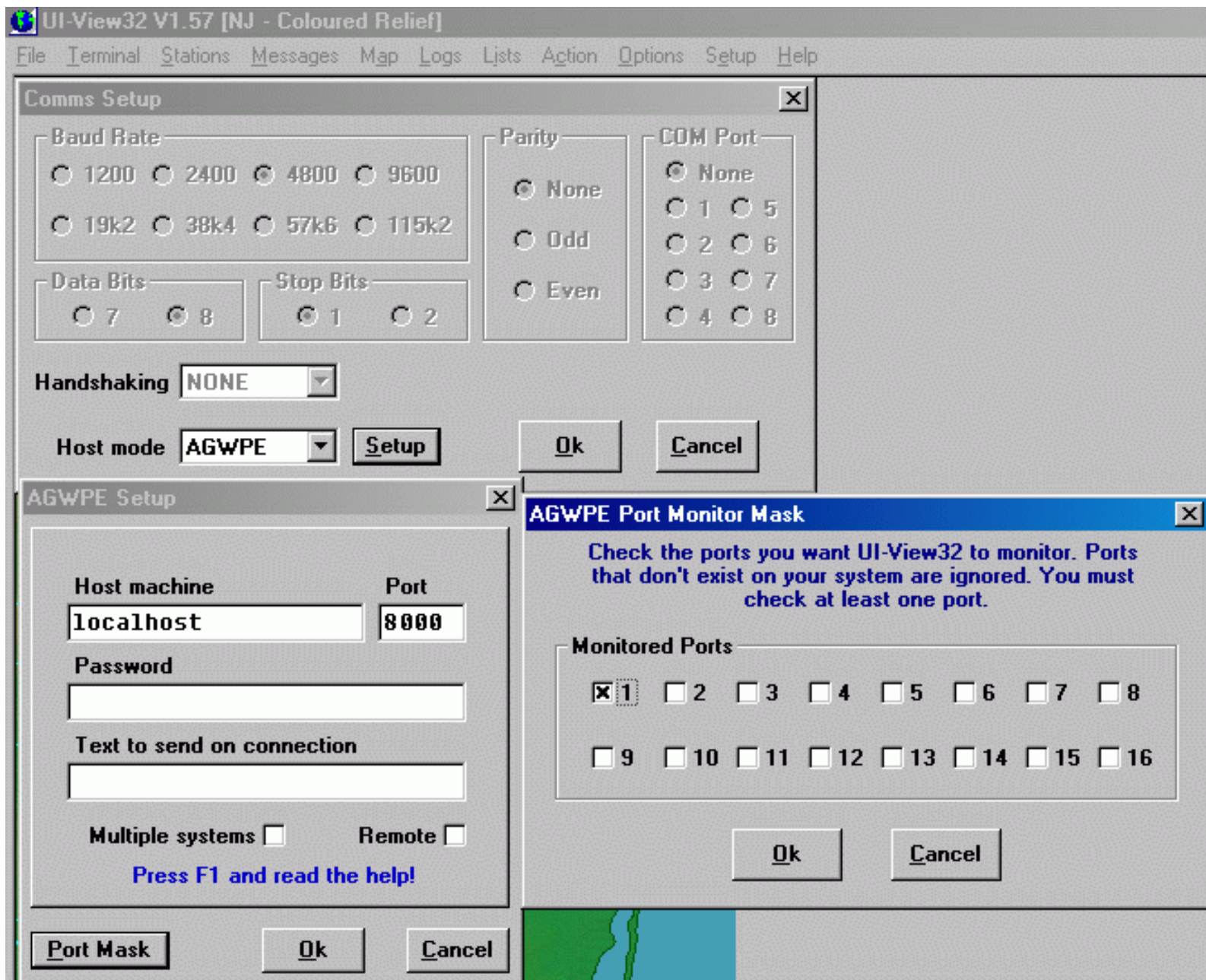
AGW

Setup

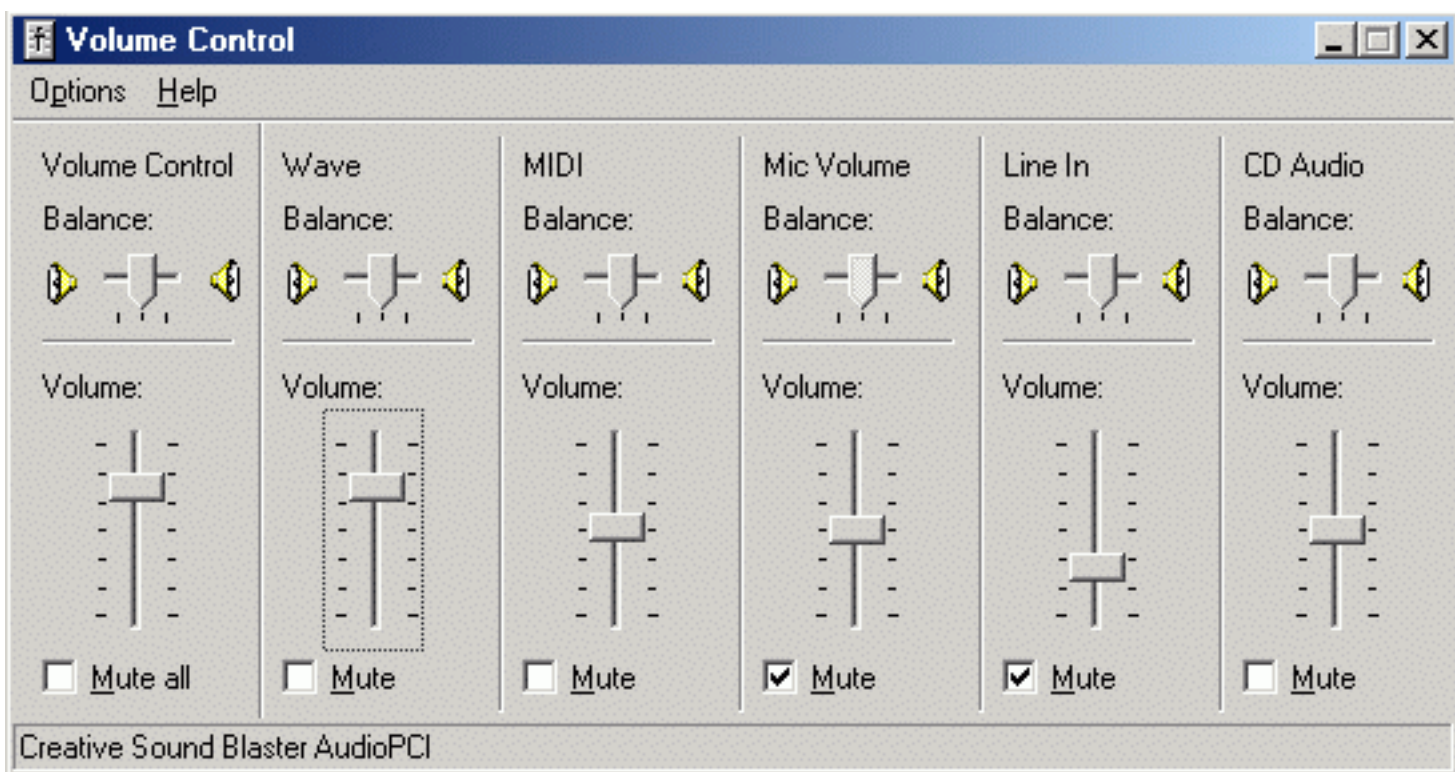
Ok

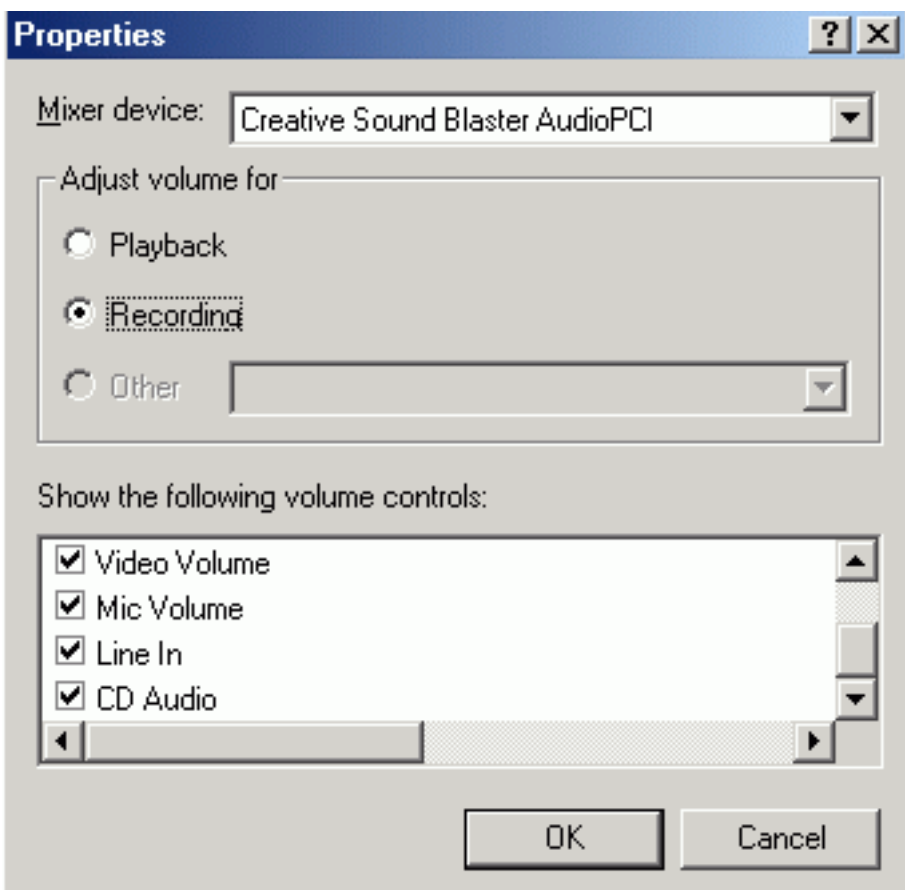
Cancel

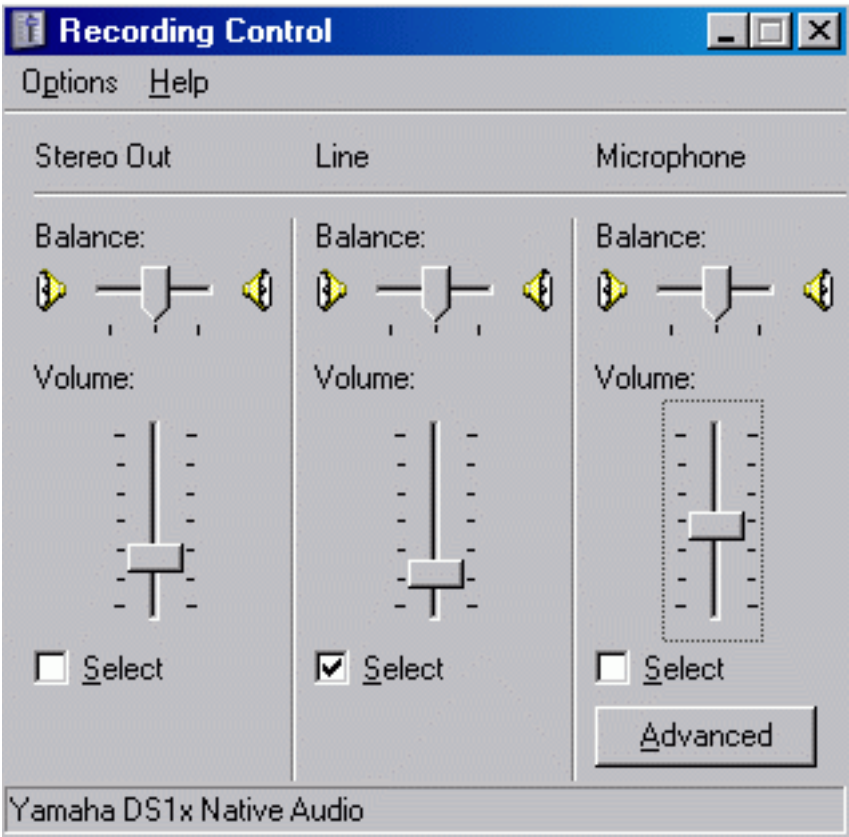


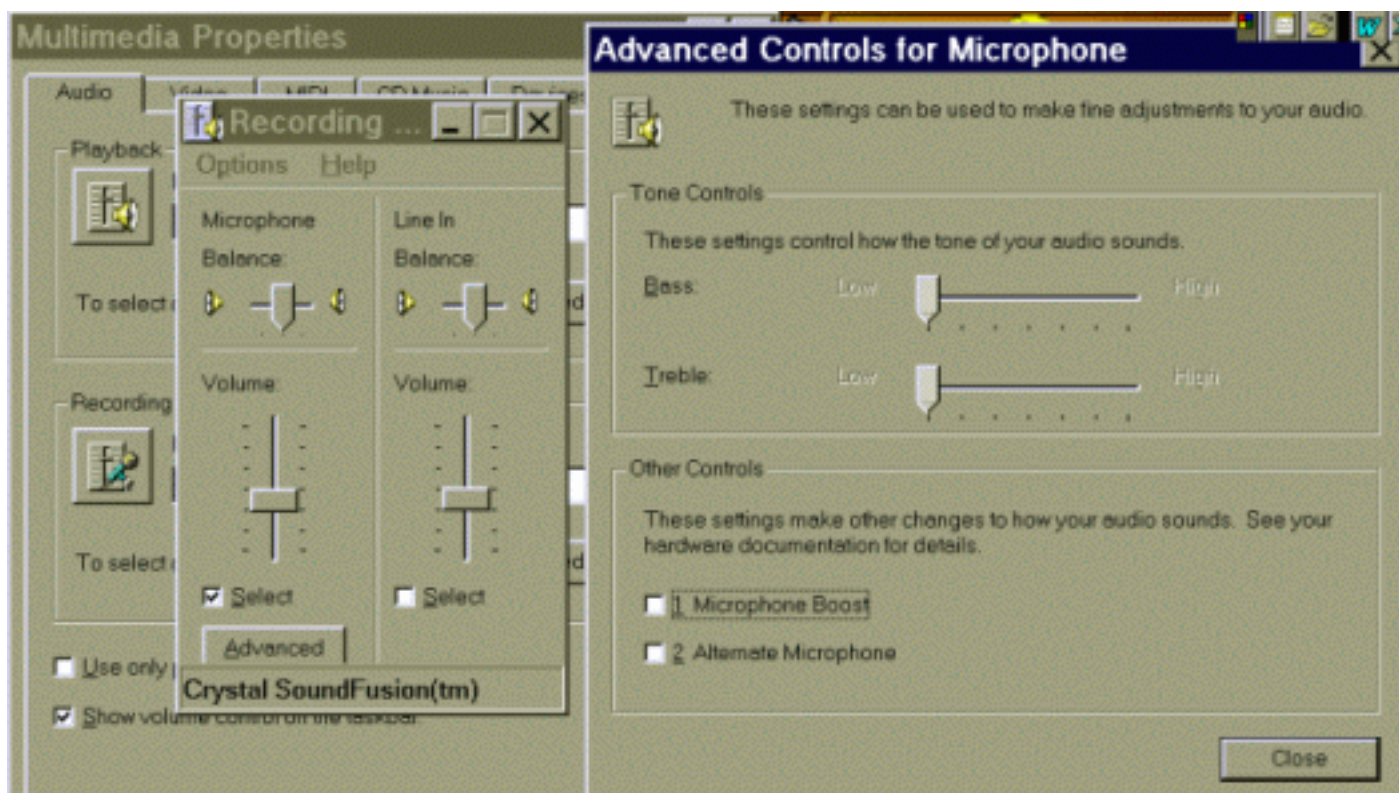


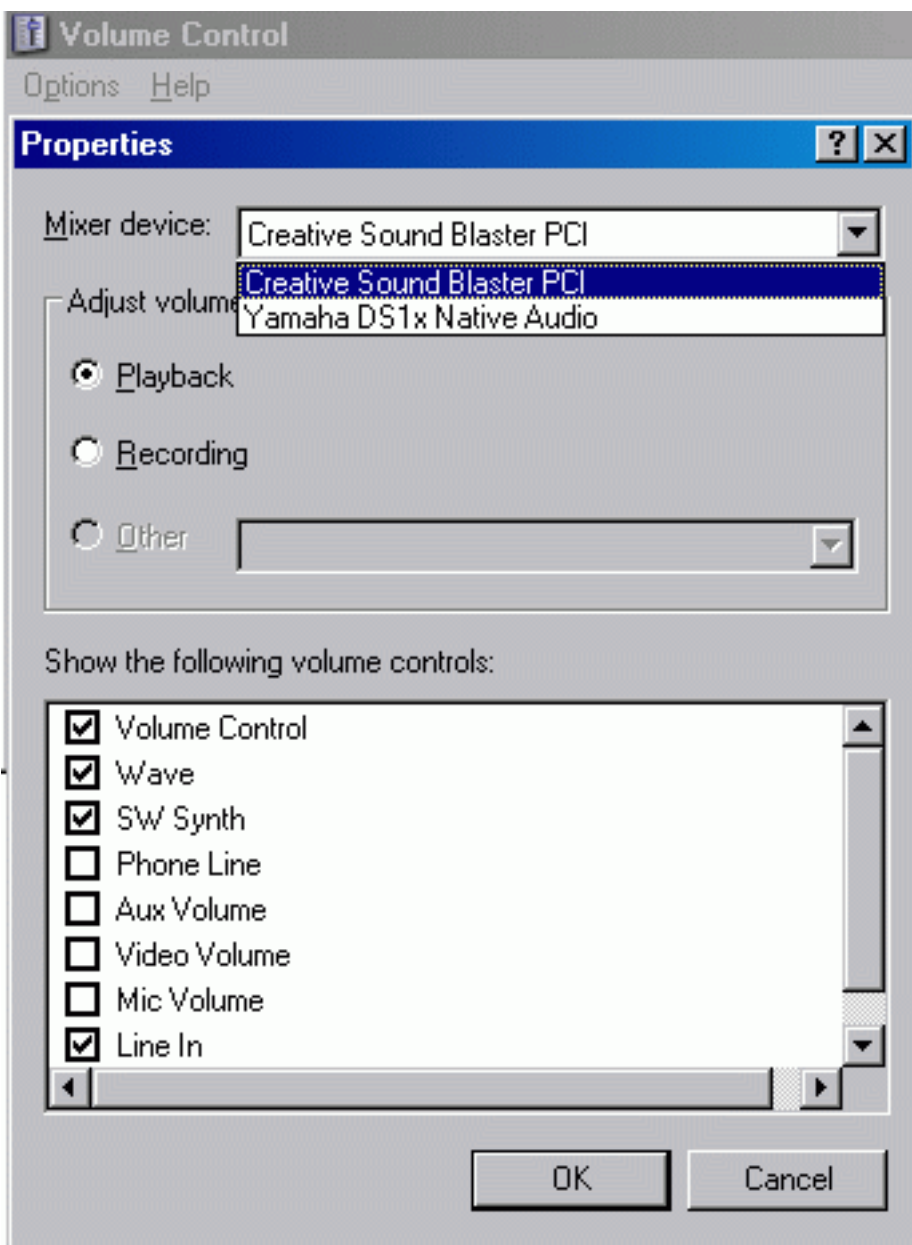
Comms Setup (Press F1 For Help)		
Baud Rate <input type="radio"/> 1200 <input type="radio"/> 2400 <input type="radio"/> 4800 <input checked="" type="radio"/> 9600 <input type="radio"/> 19200 <input type="radio"/> 38400		Connect String <input type="text" value="*** CONNECTED to"/>
Data Bits <input type="radio"/> 7 <input checked="" type="radio"/> 8	Stop Bits <input checked="" type="radio"/> 1 <input type="radio"/> 2	Disconnect String <input type="text" value="*** DISCONNECTED"/>
Parity <input checked="" type="radio"/> None <input type="radio"/> Odd <input type="radio"/> Even	Com Port <input checked="" type="radio"/> Com1 <input type="radio"/> Com2 <input type="radio"/> Com3 <input type="radio"/> Com4	Editor Line Length <input type="text" value="74"/> characters
Handshaking <input type="text" value="XON/XOFF"/>		DCD shows con <input type="text" value="YES"/>
Ok Cancel		Host mode <input type="text" value="AGW"/>





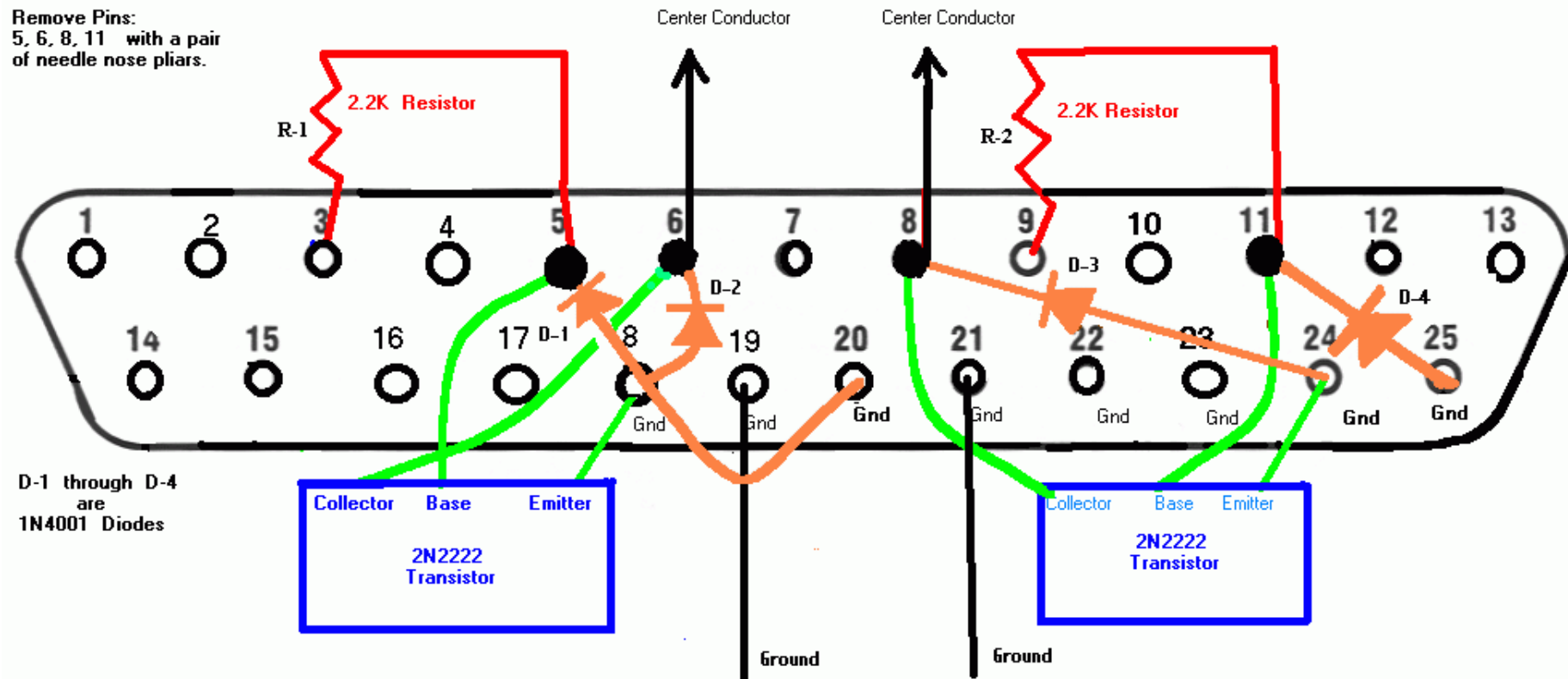




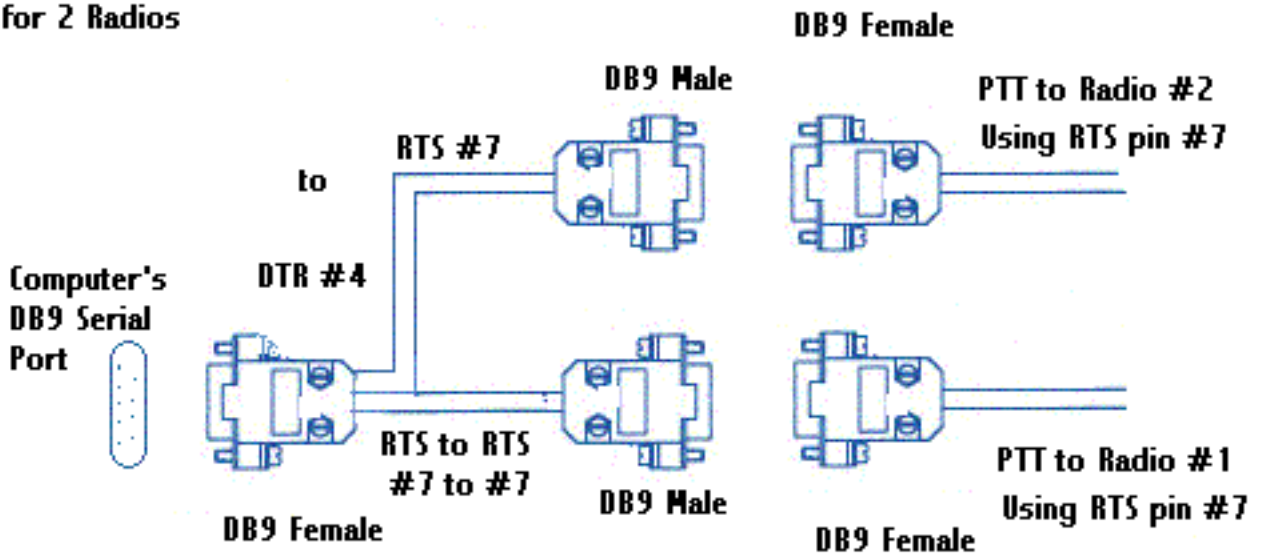


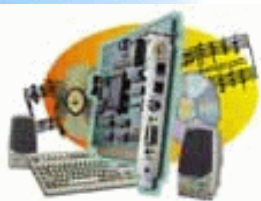


Remove Pins:
5, 6, 8, 11 with a pair
of needle nose pliers.



**DB9 PTT Adapter
for 2 Radios**





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A Cable Construction Trick

I have several TNCs and several radios, and sometimes "mix-and-match" them. The problem is that I didn't want to make a unique cable for each radio/TNC combination. Instead I made just **one cable for each radio** which terminates in a **male** DB9 connector. And I made just **one cable for each TNC** which terminates in a **female** DB9.

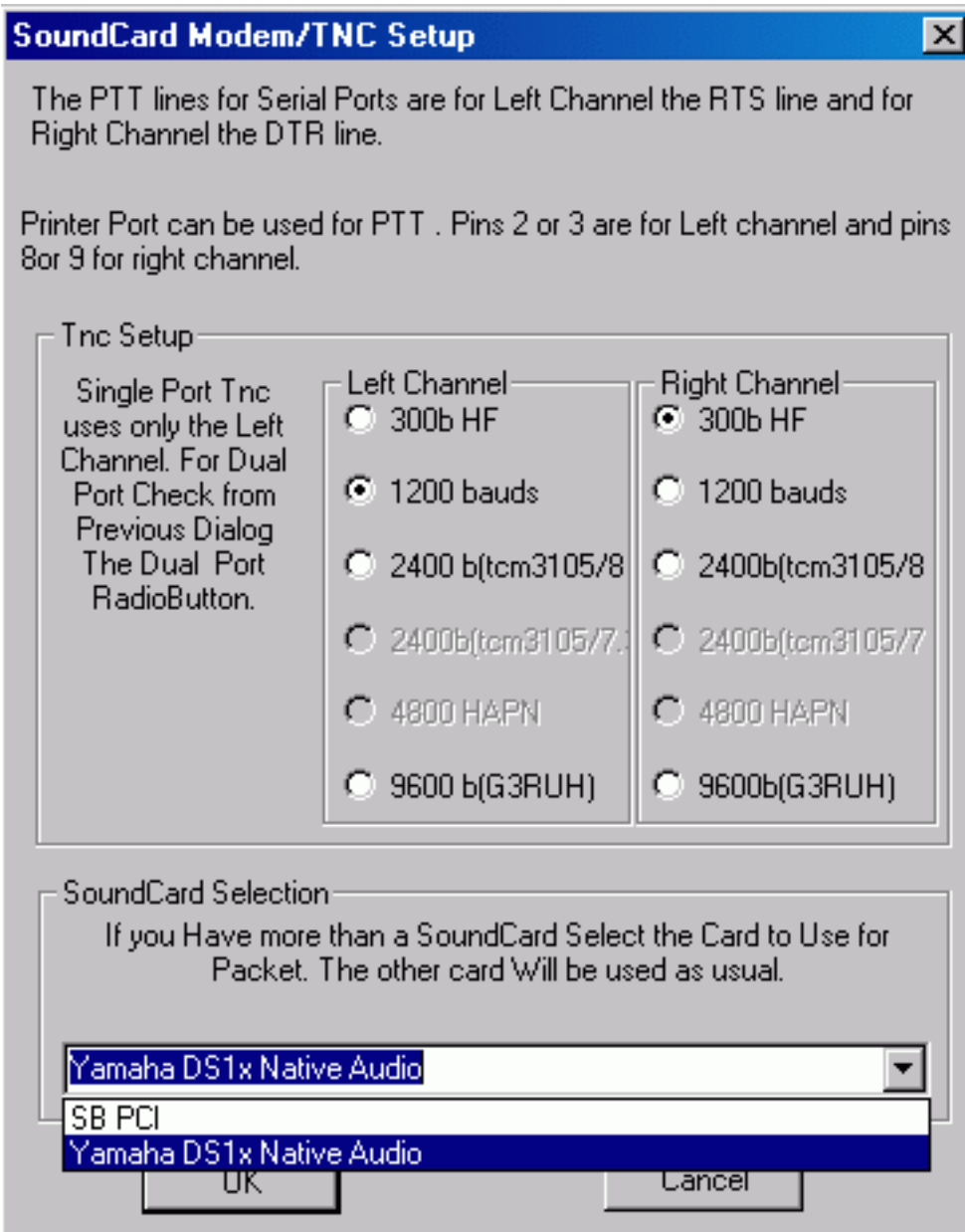


Then, depending on which radio and TNC combination I want to use, I plug the DB9 connectors together.

The key is to establish a common wiring plan for the DB9 connectors, something like:

<u>Radios</u>			<u>TNC or Sound Card</u>		
TX audio pin-->	male DB9	pin 1	1 pin DB9 female <---	TX audio pin	
PTT pin----->	male DB9	pin 2	2 pin DB9 female <---	PTT pin	
RX audio pin-->	male DB9	pin 3	3 pin DB9 female <---	RX audio pin	
Ground pin---->	male DB9	pin 5	5 pin DB9 female <---	Ground pin	

For my **packet sound card cables**, I just adopted the TNC (DB9 female) scheme. I can now plug my sound card cables into *any* of my radio cables and run sound card packet on my mobile, base VHF, base HF or portable rigs! I don't need to build a separate sound card interface for each radio...just a separate radio connector.



Properties for Port1 ? X

Tnc Setup Tnc Commands

Select Port
COM1: ▼

Be carefull for Modems like Baycom etc need also the Baudrate.

SerialPort/modem BaudRate
1200 ▼

Tnc Type
Select Your Tnc Model.
SoundCard ▼

Tnc Sub Type
Select The special KISS Mode.
KISS Simple ▼

Options

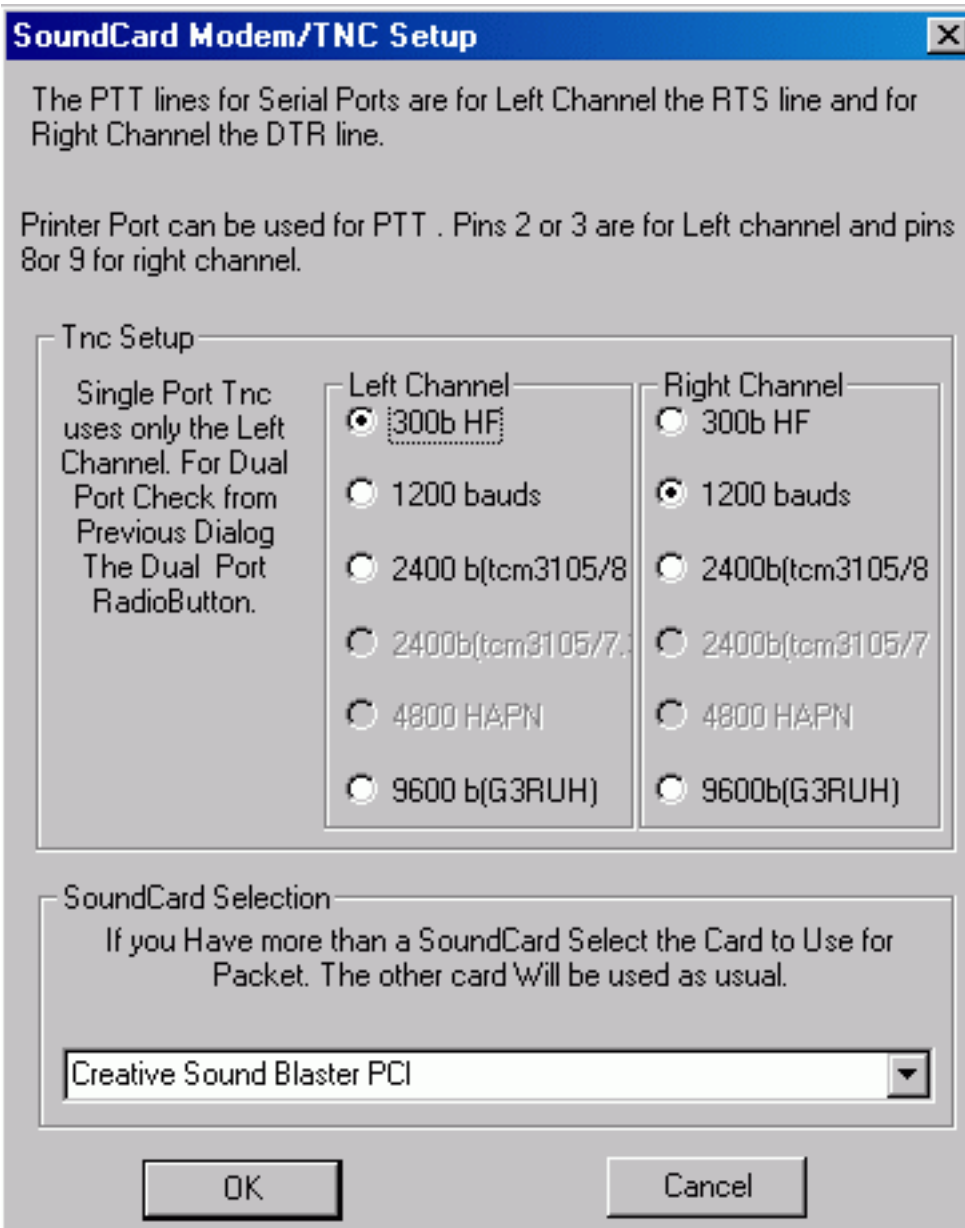
Tnc Control Commands
IniKiss1
IniKiss2
IniKiss3
ExitKiss On Exit ☐

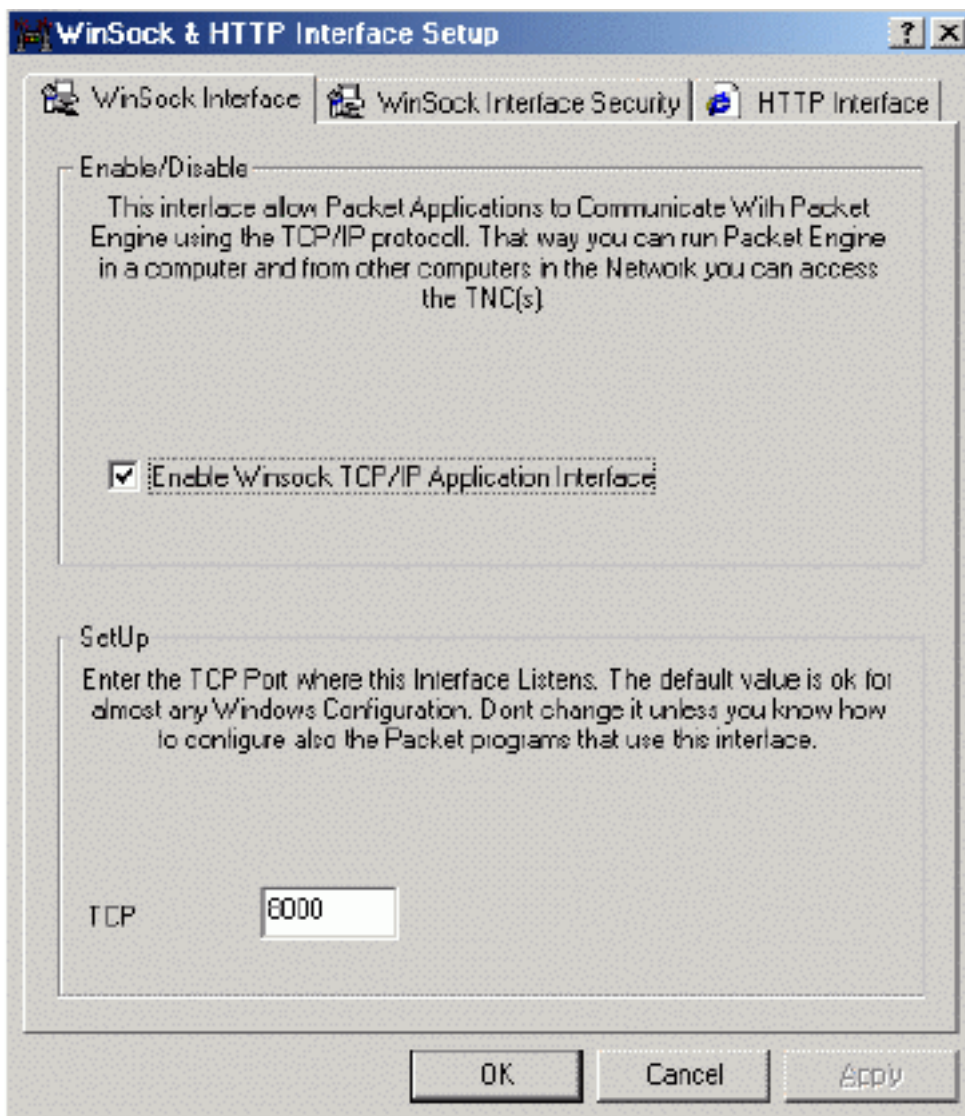
☐ SinglePort
☒ DualPort
☐ Quadraple Port

Tnc RadioPort
Port Description (Frequency,BaudRate etc)

	Port Description (Frequency,BaudRate etc)	Ports Kiss Id
Port1	Packet	0
Port2	DX Clusters	16
Port3		0
Port4		0

OK Cancel





Properties for Port1 [?] [X]

Tnc Setup | **Tnc Commands**

Select Port: COM1:

Be carefull for Modems like Baycom etc need also the Baudrate.

SerialPort/modem BaudRate: 1200

Tnc Type: Select Your Tnc Model. SoundCard

Tnc Sub Type: Select The special KISS Mode. KISS Simple [Options]

Tnc Control Commands:

IniKiss1: []

IniKiss2: []

IniKiss3: []

ExitKiss On Exit: ☒

☒ SinglePort

☐ DualPort

☐ Quadraple Port

Tnc RadioPort

Port	Port Description (Frequency,BaudRate etc)	Ports Kiss Id
Port1	APRS 1200baud	0
Port2	[]	0
Port3	[]	0
Port4	[]	0

[OK] [Cancel]